

**OPPORTUNITIES FOR MANAGEMENT REFORMS AT
THE NATIONAL OCEANIC AND ATMOSPHERIC
ADMINISTRATION**

HEARING

BEFORE THE

SUBCOMMITTEE ON OVERSIGHT OF
GOVERNMENT MANAGEMENT, RESTRUCTURING,
AND THE DISTRICT OF COLUMBIA

OF THE

COMMITTEE ON
GOVERNMENTAL AFFAIRS
UNITED STATES SENATE

ONE HUNDRED FIFTH CONGRESS

FIRST SESSION

APRIL 24, 1997

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OPPORTUNITIES FOR MANAGEMENT REFORMS AT THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

THURSDAY, APRIL 24, 1997

U.S. SENATE,
SUBCOMMITTEE ON OVERSIGHT OF
GOVERNMENT MANAGEMENT, RESTRUCTURING,
AND THE DISTRICT OF COLUMBIA,
OF THE COMMITTEE ON GOVERNMENTAL AFFAIRS,
Washington, DC.

The Subcommittee met, pursuant to notice, at 12:40 p.m., in room SD-342, Dirksen Senate Office Building, Hon. Sam Brownback, Chairman of the Subcommittee, presiding.

Present: Senator Brownback.

Staff Present: Ron Utt, Staff Director, and Esmeralda M. Amos, Chief Clerk.

OPENING STATEMENT OF SENATOR BROWNBAC

Senator BROWNBAC. I will call the hearing to session, and thank you all for joining me. I apologize for being a few minutes late. We have another little matter going on today called a Chemical Weapons Convention and some pretty big hearings on that and discussions going on, which there may be some breaks taking place during the hearing with votes scheduled for this afternoon. So we may have to take intermittent recesses for that.

This is the fourth in a series of hearings on the Department of Commerce. In our last hearing, we explored the role of the Department of Commerce in Federal statistical gathering, analysis, and dissemination, to consider opportunities for reform and consolidation. The purpose of today's hearing, though, will be to look at the National Oceanic and Atmospheric Administration, NOAA. More precisely, we hope to learn more about the Federal surveying and mapping, the NOAA fleet, and the National Weather Service. Critics have argued for years that NOAA performs functions that could be better handled by the private sector or consolidated elsewhere within the government. For instance, more than 100 private companies in the United States compete with the National Weather Service to prepare and disseminate weather forecasts to the public and businesses.

There is also the issue of the NOAA fleet, which is an aging fleet. There has been a lot of documentation about its needs, and whether or not the Congress is going to fund those needs and what options will take place and what options there are for private sector

involvement in providing that sort of service that the fleet currently does. We will have three panels on this.

The first panel is the Hon. Diana Josephson, Deputy Under Secretary for Oceans and Atmosphere, National Oceanic and Atmospheric Administration. Ms. Josephson, I appreciate very much your coming up to the Subcommittee to testify. I like to treat these as informal sessions as much as possible so that if you would like to present your written statement, I am happy to have that. If you want to read off of it, that is fine. If you would rather just get right down to the nub, as we say, on it, and say what your thoughts and opinions are on NOAA, particularly the NOAA fleet, particularly the possibilities of privatizing some of these services, that would be most appreciated, and then we can have an exchange.

At any rate, the decision is yours and so is the floor. Thank you for joining us.

TESTIMONY OF DIANA JOSEPHSON,¹ DEPUTY UNDER SECRETARY FOR OCEANS AND ATMOSPHERE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, U.S. DEPARTMENT OF COMMERCE, ACCOMPANIED BY ADMIRAL WILLIAM STUBBLEFIELD, DIRECTOR, NOAA CORPS, AND JOHN CAREY, ASSOCIATE DEPUTY UNDER SECRETARY FOR OCEANS AND ATMOSPHERE

Ms. JOSEPHSON. Thank you. What I would like to do is submit my written testimony for the record, and I have a brief oral statement.

Senator BROWNBACK. It will be submitted for the record and put in the record.

Ms. JOSEPHSON. And then we can engage in discussion. Thank you for the opportunity to appear before you today to present highlights of the National Oceanic and Atmospheric Administration's management reforms and major system acquisition programs. First, I would like to give you a few examples of the many steps NOAA has taken to improve agency management, streamline operations, and save money.

First, NOAA has implemented a strategic planning process which defines and validates our business activities, guides the development of operating plans and forms the basis for management decisions. NOAA holds managers accountable for results and uses performance measures to validate progress.

Second, by 1999, our workforce will be reduced by 14 percent from 1993 levels by eliminating 2,061 full-time equivalent positions. Three, we are working with the Department of Defense to merge civilian and defense weather satellites for savings of \$1.7 billion over the lifetime of the program through 2018. Fourth, we no longer provide specialized weather services including agriculture, fruit frost, fire weather for non-Federal non-wildfire land management and specialized event forecasts. Fifth, NOAA has eliminated or streamlined 20 percent of its regulations. And finally, we are downsizing the NOAA Corps to 299 officers by September 30, 1997, and plan to convert these from a uniformed service to ci-

¹The prepared statement of Ms. Josephson and other material appears on page 43 in the Appendix.

vilian employees resulting in savings to the Federal Government. This legislation is currently under review by the Office of Management and Budget and will be forwarded to the Congress shortly.

Second, I would like to focus on two areas that you mentioned in your opening statement: Weather Service modernization and the NOAA fleet. The Weather Service is two-thirds of the way through a \$4.5 billion modernization and restructuring effort that is deploying Next Generation Weather Radars, advanced geostationary satellites, automated service observing systems, and a new computer and communication system, the so-called AWIPS. This restructuring streamlines the Weather Service from over 300 weather offices to 119 weather forecast offices and 13 river forecast centers.

The Nation is already experiencing the benefits brought about by the modernization. For example, next generation Doppler radars have improved the average lead time for tornado warnings from zero to 2 minutes prior to modernization to about 12 minutes in 1996. A 1992 study by the National Institute of Standards and Technology found that every dollar spent on weather service modernization provides \$8 in benefits to American taxpayers.

The final component of the modernization is AWIPS. As expected, development of this complex new system has provided many challenges to management. The AWIPS program received approval on February 12 from the Secretary of Commerce to begin limited deployment. This decision authorizes the acquisition and installation of 21 systems across the Nation. Once the AWIPS Build three software, which is the third out of six builds in total, is complete and operationally tested and evaluated this fall, NOAA will seek approval for full production decision in December 1997.

Weather and climate services are provided to the public and industry through a unique partnership between the Weather Service and private meteorological sector. The Weather Service will continue to focus on its basic mission to provide forecasts and warnings for the public safety, and the private sector will continue disseminating forecasts and tailoring basic information for business uses. Since forecasts must be developed in order to provide warnings, we feel it is our responsibility to release them to the general public as well as the warnings.

I would like to respond briefly to a recently expressed GAO concern that NOAA is unprepared to develop the Next Generation Geostationary Satellite System. In order to begin a GOES-Next generation program, two prerequisite efforts must be completed within NOAA. First, requirements for future geostationary observations must be validated jointly by the Weather Service and our satellite service. Second, NOAA must assess whether available and emerging technologies can meet NOAA's technical and economic requirements. Both of these assessments are underway and will be completed by the end of 1998.

On fleet replacement and modernization, NOAA's philosophy is that the most cost effective acquisition of marine data is likely to be provided by a mix of charter vessels, contracts for data, university ships and NOAA ships. From our limited experience to date, we believe the jury is still out on whether the private sector can provide the same services at less cost. Due to NOAA's internal cost-cutting efforts, our ships may operate at comparable or cheaper

costs than commercial vessels over the next 7 to 10 years of their useful lives.

NOAA is committed to expanding the use of private contractors and cooperative arrangements with universities for ship support. We recently laid up two hydrographic ships and made \$3 million in operating funds available for hydrographic contracting. These funds supplement \$5.5 million in program funds which have also been redirected for private sector hydrographic contracting. NOAA is also working with UNOLS to develop a cooperative memorandum of understanding that will coordinate use of NOAA research vessels, in particular the new *Ronald H. Brown*. In addition, NOAA intends to acquire up to half a year of ship time on UNOLS vessels.

Before I conclude, let me say that we consider IG recommendations and GAO reports to be an important management tool and are committed to using the audit process to strengthen our programs. Mr. Chairman, this completes my remarks. I will be glad to answer any questions you may have.

Senator BROWNBAC. Thank you very much. Appreciate very much your coming here and testifying and being willing to make your statements regarding NOAA. Let me look particularly at the fleet because that is the area that has drawn the most interest by a number of people. As I understand, the fleet is—I hate these numbers when I get—approximately 25 ships. How many ships are in the fleet?

Ms. JOSEPHSON. Fifteen.

Senator BROWNBAC. You have 15 ships that are actually in the fleet?

Ms. JOSEPHSON. Correct.

Senator BROWNBAC. OK. Did you decommission two ships so that you could take some of those funds for privatizing and outsourcing that work?

Ms. JOSEPHSON. Correct.

Senator BROWNBAC. OK. So you had 17 and now you have, or you had 15 and you just decommissioned two that—

Ms. JOSEPHSON. Right. We had 17 and we—

Admiral STUBBLEFIELD. We had 24 at one time.

Ms. JOSEPHSON. We have decommissioned down to 15.

Senator BROWNBAC. So you have 15 in operation today?

Ms. JOSEPHSON. Correct.

Senator BROWNBAC. OK. What is the useful life left on these 15 ships? Can you give me the range of what they are on these ships?

Ms. JOSEPHSON. Two to 3 years to 10.

Admiral STUBBLEFIELD. No, actually probably 5 to 7 years up to 30 years.

Ms. JOSEPHSON. If you recondition.

Admiral STUBBLEFIELD. Well, we have two new ships.

Ms. JOSEPHSON. I was forgetting the two new ships. We have two new ships.

Admiral STUBBLEFIELD. Up to 30 years plus.

Ms. JOSEPHSON. Right.

Senator BROWNBAC. OK. So you have two ships, and there is a 30-year life expectancy left with, and the remaining would be a 5-to 7-year life expectancy?

Ms. JOSEPHSON. Five to 10.

Senator BROWNBAC. OK. Depending on how well they age and how much they are used?

Ms. JOSEPHSON. How old they are. The conditions they are used, how we maintain them, whether we do a repair to extend their useful life.

Senator BROWNBAC. I do not mean to trap you on any of these questions, but I have some technical questions. I look at this and I want to know what in the world is this. This does not sound very good. So if you need to respond to me later or get something from somebody else, please feel free to do it. I understand that your daily cost of operation of these ships is more than \$21,000 a day. That is the average cost of using one of your ships. Now do you know if that is anywhere close to approximate? Would you disagree or would you agree with that number?

Ms. JOSEPHSON. I do not know the answer to that, and it would vary from ship to ship because we have ships that are in the 100-foot length to the ships in the 250–270-foot length, and obviously the cost to operate them will vary widely.

Admiral STUBBLEFIELD. I can answer that.

Senator BROWNBAC. I am sorry. Do you mind, Ms. Josephson, if he comes up and states his name for the record so that we can get that testimony?

Admiral STUBBLEFIELD. Certainly. My name is William Stubblefield. I am the director of NOAA Corps operation in charge of the ships and aircraft.

Senator BROWNBAC. Good. Thank you. Mr. Stubblefield?

Admiral STUBBLEFIELD. Correct.

Senator BROWNBAC. Thank you.

Admiral STUBBLEFIELD. The \$21,000 would be on the very upper end of our ship operation, and that would be with operational costs and overhead. The majority of our ships would be in the price range of anywhere from \$8 or \$9,000 per day up to the \$20–\$21,000, but I have to emphasize that includes all costs, full costs.

Ms. JOSEPHSON. Would you detail that?

Admiral STUBBLEFIELD. Yes. The smaller range vessels, the smallest size vessels would be in the \$6 to \$7,000 range. Our fishery ships generally cost somewhere between \$8 to \$15,000 per day, depending on size.

Senator BROWNBAC. Ms. Josephson, if I could——

Ms. JOSEPHSON. I was just wondering what that covered when you say whole cost?

Admiral STUBBLEFIELD. I thought I said it covers the maintenance costs, the fuel, the personnel, and all the associated overhead.

Senator BROWNBAC. OK. Ms. Josephson, when you look at sending a ship out on mission or when you are first developing your budgets, do you go out and contact private groups or university groups that have ships that can provide the type of service you are looking for and ask them to bid on the type of work that you are planning for that year or——

Ms. JOSEPHSON. No.

Senator BROWNBAC [continuing]. What is your process?

Ms. JOSEPHSON. Our process is that we generally look a couple of years ahead. We do a rotating 2-year forward plan, but I would

emphasize that we own these ships. They are fully amortized at the moment, so we are not paying any capital costs. It is like owning your own car once you pay the monthly payments. So our philosophy is to use our ships for the remainder of their useful lives because that is the most cost effective approach for the government.

Senator BROWNBAC. Have you done that study internally?

Ms. JOSEPHSON. Done what study internally?

Senator BROWNBAC. To determine that this is the most cost effective way?

Ms. JOSEPHSON. We have done a study. We were asked by the Congress to do a study, I guess, in the fall of 1995, which we submitted in the spring of 1996.

Senator BROWNBAC. And you went out and contacted—

Ms. JOSEPHSON. We had a contractor who went out and contacted people in industry to ask them about the availability of their vessels and to give us cost information, and I would like to ask Mr. Carey to respond to that in more detail.

Senator BROWNBAC. You have to state your name for the record, please.

Mr. CAREY. Yes. My name is John Carey. I am the Associate Deputy Under Secretary for Oceans and Atmosphere.

Senator BROWNBAC. Welcome.

Mr. CAREY. Thank you, sir. I believe your question was had we done a study, and, yes, the answer is we did do a study at the request of the Senate Appropriations Committee which was submitted to the Congress, and we certainly would be happy to provide a copy of that for the Committee to—

Senator BROWNBAC. Good.

Mr. CAREY [continuing]. To review.¹

Senator BROWNBAC. If you would, we would appreciate your doing that.

Mr. CAREY. And in answer specifically to your question, as part of that study, we did engage various contractors who went out to survey the hydrographic community, the fisheries community, and the research community, both on the question of availability of vessels and also to solicit information on cost data, and all of the details of that are included in that study.

Senator BROWNBAC. Now, the Commerce Department's Inspector General, and this should come as no surprise to you, strongly believes NOAA's billion dollar modernization plan for these ships should be terminated, and he says, and I just want to quote this portion to you, "Because private sector and other Federal ships can provide improved services at reduced cost, there is no reason to make further capital investment in NOAA's fleet." And the IG actually recommends using the modernization funds to pay for the costs associated with decommissioning the fleet. Are you familiar with that statement from the IG?

Ms. JOSEPHSON. Yes, we are.

Senator BROWNBAC. And would you care to respond directly to the Commerce Department's Inspector General point about that?

¹ Information provided by Mr. Carey, the study "NOAA Fleet Assessment: Report to the Senate Appropriations Committee, Subcommittee on Commerce, Justice, and State," December 15, 1995 is retained in the Subcommittee files.

Ms. JOSEPHSON. We believe that the most cost effective approach to continue our ship assets is in each case when the time comes to replace a ship to have an open procurement where people can bid to have the government construct the ship, they can bid to lease the ship to us, they can bid to take an existing ship and modify it to meet our requirements. At that time, we will look at the best deal for the government, what is the most cost effective deal. As I mentioned before, we currently own our ships. The government has paid for them. They are fully amortized. We are not paying any capital expenses, and so we believe it is cost effective for us to continue to use those ships through the remainder of their useful lives.

Senator BROWNBACK. Even though the upper end figure is \$21,000 per day to operate some of your ships?

Ms. JOSEPHSON. Yes, but this is 300—

Admiral STUBBLEFIELD. That is a 274-foot vessel. That is the same range as what the university fleet would be as well.

Ms. JOSEPHSON. These are identical ships.

Admiral STUBBLEFIELD. These are identical ships. I would like to say there is a uniqueness factor as well. The fishery vessels, for example, we require both a biomass sampling as well as environmental sampling done simultaneously. We are the only ships in the domestic market that can do this combined sampling. The university community, as Dr. Johnson will testify later, I believe, will say that the university ships cannot trawl. The commercial sector vessels, which can trawl, do not have the berthing facilities, do not have the scientific space, nor do they have some of the sophisticated equipment hull-mounted that we need for the environmental studies.

There are no vessels that we know of that we have been able to find that can do this combined operation at this point in time.

Ms. JOSEPHSON. Mr. Chairman, maybe it would be helpful just to step back a moment and point out that we do not have a fleet which is homogeneous. We basically have four fleets. We have a fleet of two vessels which are equipped to go do deep ocean oceanography. These are bigger ships, and they are both new ships. The government has just paid for them. One came into service last year and one is coming into service in July. We also do coastal research, and we have one small vessel, which we are planning to use for the rest of its useful life, and then we plan to switch to chartering for that vessel.

We have a fleet of three hydrographic vessels doing nautical charting, which are very different. Each of these types of fleets is very different. And then we have at the moment nine fishery vessels. We plan to use them for their useful life. Six of them are of the nature that Admiral Stubblefield just mentioned. They are uniquely configured to do the basic research stock assessment work which we do every year as the foundation for the fishery management plans, and they have to be able to trawl very long and very heavy nets behind them and then take the biomass which is caught and move it through a laboratory facility where it is counted, dissected, and analyzed, and at the same time the ship is equipped to take oceanographic conditions simultaneously about the salinity,

the quality of the water, so that we match the biomass with the conditions in which we catch it.

And we do these surveys every year. This is a 30-year data set. We steam down exactly the same track and based on that, we assess, have the stock of fish, these particular species, changed from last year to this year, and it is upon this scientific basis that we perform all our fishery management functions. Those ships are not available in the private sector and we have a request in the administration's budget this year for \$2 million to come up with a proposed design for the next generation of these vessels, which, as I said before, would be procured in an open procurement. These are our requirements and bid to us what you think would be your preferred way of doing business with us. We do not have a predisposition to continue to own ships over the long-run. We want to get the best deal for the government.

Senator BROWNBAC. Ms. Josephson, have you talked with the Inspector General of the Commerce Department about the Inspector General's position regarding the NOAA fleet organization?

Ms. JOSEPHSON. We have.

Senator BROWNBAC. And you just think the IG is wrong?

Ms. JOSEPHSON. Yes.

Senator BROWNBAC. And you think they operate off of what? Flawed data or just the perception that they ought to privatize and so, therefore, they are going to do it?

Ms. JOSEPHSON. I do not want to characterize the basis of his opinions.

Senator BROWNBAC. GAO has looked into this as well and comes to similar types of conclusions as the IG does. Are they inaccurate too?

Ms. JOSEPHSON. Could you refresh my recollection of what the GAO's statements are? I just do not remember off hand.

Admiral STUBBLEFIELD. If I may, Senator, there was a GAO—

Senator BROWNBAC. Let me get to her—

Admiral STUBBLEFIELD. Pardon me.

Senator BROWNBAC [continuing]. Because we ought to be fair about this. Let us cite the study here, what we are looking at. And it would be fair for us to provide that to you. GAO made a similar comparison and reported—this is in the 1994 study, and we should get that to her so you can have a chance to talk with the GAO as well about this. This was a 1994 study. Their citing on this, Ms. Josephson, is that while NOAA's fleet is comparatively expensive to operate, the Commerce Department's IG calculated that for certain large oceanic vessels, NOAA's average daily cost is over 60 percent higher than the average cost of similar University National Laboratory Systems vessels. The GAO made a similar comparison report at a 25 percent cost difference in 1994.

Ms. JOSEPHSON. Well, they are talking now about our bigger ships, and at that time, we had older, more expensive vessels, which have now been laid up. As I mentioned, we have just acquired two new, much more efficient, research vessels in the fleet plus we have had a major streamlining effort. I mentioned that we are going down 14 percent in our employees. The NOAA Corps and the associated support staff is part of that reduction. So they have been streamlining. They have had an intensive effort to become

more efficient in their maintenance operations. We have been engaged in a lot of activity since 1994 to streamline the fleet and to make it more efficient.

Senator BROWNBAC. When was the last time, the department, not the IG, or the GAO, but the Department of Commerce itself or NOAA did a head-to-head comparison of whether or not they ought to contract out for these services with the private sector?

Ms. JOSEPHSON. Well, let me explain what we are doing. In the case of *Ka'imimonana*, which is one of the new ships which was entered into service last year, we are in the middle of an A-76 cost comparison to give us a data point on are we more efficient or are we not more efficient. We are in the middle of this right now. We will be issuing an RFP to industry, which the NOAA Corps will respond to also, as part of the A-76 process. So by next spring, we will have a real life cost comparison between one of our ships at least and the private sector, whether we operate them more effectively than the private sector.

We are also in the case of UNOLS, as was mentioned in my testimony, in the process of entering into a memorandum of agreement with them in which our ship-time is made available to UNOLS in return for ship-time on other vessels. Our ship will be stationed in the Atlantic. They have ships in the Pacific. Obviously, it is much more efficient for us to trade times so each of us do not steam through the Panama Canal all the time and waste a lot of energy dead-ending, I think they call it.

We also have some data points in our contracting for hydrographic services. Long Island Sound was our first hydrographic contract. This contract appeared cost effective on its face, but the contractor told us that it actually cost them 50 percent more to do the survey work than they had calculated in their bid. And I have some testimony from the contractor. The reason we had to shift this hearing—you were very courteous to make it earlier—is because I have to testify in the House at 2 o'clock, and in that hearing, this contractor has some testimony which I would like to submit to the record because it is an actual contractor, and they present their view of what it has been like to be a contractor of NOAA's in this field.

Senator BROWNBAC. I appreciate these specific points because that is what I want to have. I want specific items here.

Ms. JOSEPHSON. Right.

Senator BROWNBAC. When was the last time you generally looked at the entire fleet and said——

Ms. JOSEPHSON. It was 1995.

Senator BROWNBAC. It was 1995 when you looked at saying, OK, we are going to get out of the ship business and——

Ms. JOSEPHSON. We looked at the——

Senator BROWNBAC [continuing]. And where we are going to contract for service, and that was 1995, the study that you did on that?

Ms. JOSEPHSON. Yes. We surveyed—in each of the three segments: Fisheries, hydrography, and the research segments. We surveyed the community to get data. The IG had indicated there were available ships out there, for example, fisheries vessels. We surveyed the fishing community. They have fishing vessels available

in the winter when they are not out fishing, but we need to go and do this research work when they are fishing because of the timing of our historic data sets. They are timed for the summer months. Also, we did charter a backfill while we had one of our fishery vessels being repaired. We did charter a fisheries vessel, but we had people living in the fish hold.

The fishery ships are designed to catch fish and to carry large amounts of fish in holds. They are unstable unless you have ballast in those holds because they are not designed for our kind of work. We need a ship on which can efficiently bring in the nets, take the biomass out, and immediately pass it through a laboratory facility and do the analysis and the accompanying oceanography. You also have to have berths on board for 20 to 30 scientists. How many?

Admiral STUBBLEFIELD. Fifteen to 20 scientists.

Ms. JOSEPHSON. Fifteen to 20 scientists and they have to go out for months at a time. So it has to be reasonable living conditions for our employees. So living in a hold for months at a time, the hold of a fishing vessel, was something we did on a temporary basis, but we could not possibly do it over the long-term. So when we went looking for these charters to replace one of our fishing vessels, we did not find anything that was available that met the requirements.

Senator BROWNBAC. Did you also specify in that that we might be willing to contract for a period of 5 years so that people could—

Ms. JOSEPHSON. If we did contract, we would like to contract for longer than 5 years, and one of my requests to the House—

Senator BROWNBAC. So you are saying that even once you posed that to them, that the industry was not willing to comply with your request and saying we do not have anything we could even retrofit to make it available to you?

Ms. JOSEPHSON. In the particular case of the people on the fishing hold, this was a shorter term charter, but the AMLR charter—

Admiral STUBBLEFIELD. Yes. The one that Ms. Josephson is referring to was a 1-year backfill charter. It was not a longer charter. More recently we have chartered for a fishery work in Antarctica, and we had a 1-year with an option for additional 4 years. And both the backfill charter I am referring to and the Antarctica, the backfill charter, we did not find any domestic vessels that met our minimum requirements. The only vessels we found were foreign vessels that met our minimum requirements. In the case of the Antarctic charter for both trawling as well as environmental studies, the only ones that bid were foreign bidders.

Ms. JOSEPHSON. In fact, we chartered with a Russian ship.

Senator BROWNBAC. May I ask on that? There have been a lot of questions raised about that. You chartered with a Russian-owned ship. Is this the same issue that you are raising here, Mr. Stubblefield, on the fish stocks in the Atlantic Ocean?

Admiral STUBBLEFIELD. Well, I am confused, Senator.

Ms. JOSEPHSON. Two different.

Admiral STUBBLEFIELD. We got two different contracts or two different charters. One was for a backfill charter for 1 year that was in the New England waters.

Senator BROWNBAC. Which one was with the Russian owned ship?

Admiral STUBBLEFIELD. That was in Antarctica.

Senator BROWNBAC. OK. And your IG was critical of that, I believe, saying NOAA failed to explore adequately less expensive domestic alternatives such as universities.

Ms. JOSEPHSON. It was an open RFP on which anybody could have bid.

Senator BROWNBAC. I am sorry?

Ms. JOSEPHSON. It was an open RFP, on which anybody was free to come in and bid.

Senator BROWNBAC. Are you familiar with your Inspector General's report on that particular topic?

Admiral STUBBLEFIELD. Yes, we are.

Ms. JOSEPHSON. Yes.

Senator BROWNBAC. Mr. Stubblefield?

Admiral STUBBLEFIELD. Yes, we are.

Senator BROWNBAC. And you believe them to be inaccurate? How do you dispute the IG's statements on this particular research vessel and request for survey work where you went with the Russian-owned ship?

Admiral STUBBLEFIELD. One of the IG issues was why do we not use a university ship. The intent was that we would be doing trawling as well as the environmental studies. As it turned out, the first year, we did not do the trawling, and the university ship in the area could have satisfied the environmental aspect very well. But the intent then, and as it is now, is to do a combined trawling as well as environmental studies. Year two the vessel is doing trawling, and it will do trawling for two additional years, if we choose to exercise that option.

Senator BROWNBAC. I am reading from this IG report, which I presume you are familiar with.

Admiral STUBBLEFIELD. I am.

Senator BROWNBAC. But I am catching you some off guard so—

Admiral STUBBLEFIELD. It has been awhile.

Senator BROWNBAC. One of the university laboratory people scheduled, the representative stated that until the OIG had contacted her in late July 1995, she "had not heard that the Antarctic cruises on the *Surveyor* would be looking for a home." I would presume you would regularly contact the laboratory or the university community about your needs.

Admiral STUBBLEFIELD. Well, as Ms. Josephson said earlier, the NOAA ships conduct three types of missions, a fishery mission, this combined trawling and environmental studies, a hydrographic mission, and an oceanographic mission. In the case of the oceanographic mission, we are in frequent contact with the university community. In the case of the hydrographic mission, the university community does not normally do hydrography. In the case of the fisheries, the university ships do not have the capability to trawl, to collect the biomass. Since this program was intended to combine both the trawling and the environmental, we did not immediately go to the university community. But we had informed certain individuals, within the university ship community.

Senator BROWNBAC. I am sorry. When you do not directly go to the university community on that, what do you mean by that?

Admiral STUBBLEFIELD. Well, because they do not have the capability to trawl.

Senator BROWNBAC. You do not contact them then?

Admiral STUBBLEFIELD. Not when there is trawling involved.

Ms. JOSEPHSON. Did you not do a CBD announcement?

Admiral STUBBLEFIELD. That is what I was getting up to. But we did do a CBD announcement. We sent it out to as broad a base as we could have in the United States. That was mostly the commercial sector. Informally, we had talked to some individuals in the university community, but I do not think we talked to the university scheduling group.

Ms. JOSEPHSON. But the basic reason is because we were looking for capability that they do not have.

Senator BROWNBAC. Now who paid for the trawling equipment then that was put on the Russian ship?

Admiral STUBBLEFIELD. We paid for some upgrades to the Russian ship.

Senator BROWNBAC. Did that include the trawling equipment?

Admiral STUBBLEFIELD. I, and again, Senator, you are catching me off guard. My office was not directly involved with those upgrades, but we did pay for some, and I think it did involve some of the trawling. Did we put a full-blown trawling capability on the ship? Absolutely not. It would have been much, much more expensive than the dollars that we contributed.

Ms. JOSEPHSON. Also, ships that trawl have to be designed so the hull will withstand the weight of carrying the trawl. So if a ship is not designed for that, you cannot ordinarily put a trawl capability on without great expense in rebuilding the ship. We have looked at that because we had an excess T-AGOS vessel, and we looked to see if we could trawl with that ship since it might be a more cost effective way of getting a new vessel, but had to conclude it was just prohibitively expensive. The ship was not designed to trawl.

Senator BROWNBAC. If I could summarize what I hear you saying: You have dropped your fleet down from 24 to 15 ships, you are going to as each of these become too old to really do the work you want to do appraise then whether to go contract out, but I never heard you really say contract. I heard you say you might lease so that you would have a long-term lease or would you look at contracting for the service that you seek?

Ms. JOSEPHSON. In the case of hydrography, we are contracting for data. In the case of research, we need platforms on which our scientists go on board. For example, our ships carry our fisheries' biologists, our fisheries' scientists, to do the fisheries research, and in the case of—

Senator BROWNBAC. Will you contract there then for somebody else to operate the ship?

Ms. JOSEPHSON. Yes. There are two issues. Do we own the ship or does someone else own it and provide it to us for a lease?

Senator BROWNBAC. Well, but I am trying to get you to define—as your lease, do you mean basically like I would lease a car?

Ms. JOSEPHSON. Right.

Senator BROWNBAC. Or what about just saying we are going to place our scientists on another ship or look at that as a possible option if—

Ms. JOSEPHSON. When we charter a vessel, we do put our scientists on another ship.

Senator BROWNBAC. So you will look at that option then as well?

Ms. JOSEPHSON. I think in fisheries right now, as I recollect the figures we provided you, we have something like 534 charter days a year in which we put our fisheries scientists on charter vessels. In fact, one-third of our total days at sea are currently being handled through charters, two-thirds on our own ships. So we do a substantial amount of chartering right now.

In the case of hydrography, we are purchasing data. There is a capability in the private sector due to the fact that the Corps of Engineers, in particular, has requirements for people to provide them information about dredging when they dredge new passages into ports, new channels into ports, and so on. There is a capability in the private sector to do hydrography, and in the hydrographic area we are contracting for the data itself. In the fisheries area, the capability is within NOAA, so we are looking for platforms upon which we can do the science. The same is true in the deep ocean oceanography area.

Senator BROWNBAC. Good. Ms. Josephson, too, you cited the 1995 study when you looked at the entirety of the fleet.

Ms. JOSEPHSON. Right.

Senator BROWNBAC. Would you be willing to provide that for the record, as well?

Ms. JOSEPHSON. Yes, I think Mr. Carey already offered to do that.¹

Senator BROWNBAC. You would be willing to do that. I want to make sure that we get that so that we can look at it. Bottom line for me on this, and I know you are doing everything you can with the limited resources we have and we have got limited resources, and everybody is trying to balance the budget.

Ms. JOSEPHSON. Right.

Senator BROWNBAC. And it would be nice if we could even pay a little bit of the mortgage down for the country. So everybody is looking at areas or places that we can save money.

Ms. JOSEPHSON. Right.

Senator BROWNBAC. And when you have Inspector General reports and GAO reports that are citing this as a potentially very fruitful area for us, and some may say, look, it is just a few million dollars, well, watch your pennies and your dollars will grow, as Ben Franklin said, and we are trying to say watch your millions and your billions will grow. So we are trying to find, and I know you are trying to, too.

Ms. JOSEPHSON. Yes.

Senator BROWNBAC. We have tried to hold this hearing to get as much information about an area that looks really quite questioning when you consider those outside reports.

¹ The study "NOAA Fleet Assessment: Report to the Senate Appropriations Committee, Subcommittee on Commerce, Justice, and State," December 15, 1995 is retained in the Subcommittee files.

Ms. JOSEPHSON. Well, let me give you an analogy. I think we all know that when we buy a car and we make our payments, we own it. It is going to be more expensive to give up our car which we have paid for, to go and lease an automobile because we are going to pay for the management costs and the profit of the leasing company. This analogy applies here. Now when we get to our current ships, we believe, since the government and the taxpayer has paid for them, that it is less expensive to continue to own them during their useful lives.

Now we are open as to who operates them, and as I said, we are doing A-76 right now. We are also doing a cost comparison with UNOLS. So we are open to having other people operate our ships if that proves cost effective.

Senator BROWNBAC. Or even just selling them to somebody else to operate if that proves cost effective.

Ms. JOSEPHSON. Well, we had another data point on that. We have a ship which is identical to one of our hydrographic vessels, the *Fairweather*, and we have a report on that which we also will submit for the record.¹

The *Fairweather* has been laid up, I think, since 1988, and a company came to us and said they would be interested in taking it from us, refurbishing it, and leasing it back. So we did a Request for Information to industry last spring asking people to tell us, would they be interested in this vessel, and how much would it cost us, give us some range of expense. The responses we got showed it would be more expensive for us to lease the ship from the private sector than to run the identical ship that we have internally. So that is just another data point.

Senator BROWNBAC. Good.

Ms. JOSEPHSON. So, so far, I would say, as I said in my testimony, the jury is out. We are very open, but my goal is to make the most cost effective decisions for the government. NOAA's management's position is that we are open to leasing ships or owning them. It just depends for each ship when the decision time comes what is the most cost effective decision for the government.

Senator BROWNBAC. And you are open to contracting just for the service, not you having to have the lease on the ship then, too, which is—

Ms. JOSEPHSON. Now, how would that work? To lease for the service?

Senator BROWNBAC. You have said a third of your information is from you contracting for the data.

Ms. JOSEPHSON. No, I did not say that.

Senator BROWNBAC. That you are contracting.

Ms. JOSEPHSON. No.

Senator BROWNBAC. OK. So you are not open to that?

Ms. JOSEPHSON. I said we are contracting. A third of our days at sea are provided by ships which we charter.

Senator BROWNBAC. Correct, and so you are contracting for this service from that ship? You do not lease that ship then?

Ms. JOSEPHSON. No, those are ships we lease.

¹Report to the Congress—Lease Back of the *Fairweather* from a Private Sector Contractor, submitted by Ms. Josephson appears on page 145 in the Appendix.

Senator BROWNBAC. OK. Then maybe I am confusing you with terminology.

Ms. JOSEPHSON. Yes, I think we are probably talking past each other.

Senator BROWNBAC. What I am interested in, and I am not probably using the correct terminology, is that you do not have to own or lease the ship? You are interested in data in many cases, some cases not. But in many cases, you are just interested in data. You do not have to own that ship? You do not have to long-term lease that ship? You want to get the data.

Ms. JOSEPHSON. Correct.

Senator BROWNBAC. And you will be willing or open to contract for the data.

Ms. JOSEPHSON. In the case of hydrography that is correct. It is not correct in the case of fisheries or deep ocean oceanography. In these areas, we have the U.S. experts on our staff doing the science. This is what we are funded to do. In the case of fisheries, the data is used as the basis for the governmental regulatory function. So I believe that in that case, there might be some legal questions as to whether we could get data from those who might have a potential conflict of interest or an interest in the regulatory outcome.

Senator BROWNBAC. Have you examined the legal possibilities of doing that then?

Ms. JOSEPHSON. Have we examined the legal possibilities?

Senator BROWNBAC. Yes. Of contracting for that information?

Ms. JOSEPHSON. No, we have not looked at the possibilities of chartering for fishery data because we are charged with getting the fishery data. This is one of our major missions under the Magnuson-Stevens Act. So we would not be implementing the act if we—

Senator BROWNBAC. But acts are changeable, too—

Ms. JOSEPHSON. Well, it has just been reauthorized this last fall.

Senator BROWNBAC [continuing]. If there are ways that you would look at and say that this would be more cost effective for us to do that. I am asking you to examine all options here that are available.

Ms. JOSEPHSON. We have not looked at whether it would be more cost effective to contract for fisheries data, no.

Senator BROWNBAC. That is all I am asking you. Let us make sure we look at all ways, and if there are acts that need to be changed to do that, then I would hope you would bring that back in front of the Congress and say, now you guys may not want to do this, but this would be a less expensive way to collect the same information that we are interested in. Now you got to change the law because you have made us do it this way.

Ms. JOSEPHSON. Yes.

Senator BROWNBAC. And I would hope you would feel free to bring those sort of things in front of the Congress.

Ms. JOSEPHSON. Yes.

Senator BROWNBAC. You all have been very patient, and I do not mean to try to your patience. I am trying to figure out how we can do things as well and as inexpensive as possible. So if you have additional information you would like to submit for the record

above and beyond the items that have already been submitted, I would be happy to receive those.

Ms. JOSEPHSON. Right.

Senator BROWNBACk. Thank you for your patience and thank you for your time.

Ms. JOSEPHSON. OK. And I wanted to give this to you for the record.

Senator BROWNBACk. Yes.

The second panel will be Brian Logan, President of Photo Science, Incorporated; John Palatiello—I hope I pronounced that correctly—Executive Director of the Management Association for Private Photogrammetric Surveyors—pardon me for that. You may have to correct me. Ken Johnson, the chairman of University National Oceanographic Laboratory System. And this is a panel to look at some of the roles here again for the NOAA fleet.

Thank you all, gentlemen, for joining us. Appreciate you being here. Your full statement will be put into the record. If you would like to summarize, we would appreciate that, and then have a chance to have a dialogue or even responding to some of the statements made by the earlier panel would be appreciated as well. Mr. Logan, President of Photo Science, Incorporated, the floor is yours.

TESTIMONY OF BRYAN LOGAN,¹ PRESIDENT PHOTO SCIENCE, INC., ACCOMPANIED BY JOHN PALATIELLO, EXECUTIVE DIRECTOR, MANAGEMENT ASSOCIATION FOR PRIVATE PHOTOGRAMMETRIC SURVEYORS

Mr. LOGAN. Thank you, Mr. Chairman. I would like to submit my statement, full statement, for the record.

Senator BROWNBACk. So ordered.

Mr. LOGAN. And in doing so, there are about three important issues that I would like to discuss here in the time available to me. First, there is an historic opportunity, I think, to realize significant savings for NOAA's program, and that means increasing its utilization of the private sector, and some of that came up during the previous discussion.

In particular, the areas that I am going to discuss are for mapping, charting, and geodesy, which includes that word photogrammetry you just mentioned.

Senator BROWNBACk. Or tried to.

Mr. LOGAN. Numerous studies including those in which NOAA has participated, requested and conducted, have concluded that contracting for surveying and mapping work is both feasible and desirable. Let me give you some specifics and examples where this can be accomplished. In aerial photography, NOAA operates and maintains aircraft and aerial cameras and crews at a cost which we believe is significantly greater than the private sector. Their aircraft makes and models are far in excess of what the private sector deems necessary to do the type of work that is being done. That does not mean to say that we are not taking safety precautions into account, etc. We believe in all the safety issues related to operating aircraft.

¹ The prepared statement of Mr. Logan appears on page 60 in the Appendix.

NOAA's aerial cameras duplicate what the private sector has readily at hand, and according to the Inspector General's report, NOAA cannot adequately account for the cost of its aerial photography operations. Let me tell you that I can. My firm has been contracted for the first time to do such work in Miami, Florida, for NOAA. The work has not been totally completed to date due to adverse weather conditions. However, the comments that we have received relating to the work we have accomplished has been complimentary by all members of the NOAA technical personnel involved.

I would like to mention at this point that the Corps of Engineers carries out an enormous aerial photography program throughout the country including the Caribbean and including South America or Central America each year, and they do this without one single aircraft of their own. All of their work is contracted successfully every year. U.S. Geological Survey carries out a similar operation without any aircraft of their own.

In geodesy, which is surveying but taking into account the earth's curvature, NOAA is engaged, I believe, in competition with private firms by performing for States, often 100 percent reimbursed by the States, services otherwise available from private firms. For the program known as Supernet, NOAA has established a network of global positioning system survey control points, using the GPS constellation of satellites, in various States to create a high accuracy reference network with personnel and equipment dispatched from the Washington, D.C. area.

These projects are funded throughout cooperative agreements between NOAA and the individual States, and in fact, NOAA has some personnel out at the State level working with State Government to promote these programs. I personally fell fall of this situation recently or now it is a few years back, I suppose, in Vermont, where I developed a statewide network only to have NOAA take the project away from me and undertake it themselves.

Some discussion went on earlier about hydrographic surveying or nautical charting. This area is an initiative of the Vice President's National Performance Review. The capacity and capabilities of the private sector is significantly greater than NOAA is utilizing at this time, as evidenced by the Corps of Engineers again, who used private firms extensively, not exclusively, but extensively for the work that they do. This exhibit, which John Palatiello has here, our executive director, is showing, is a project which my firm and another firm, Vernon F. Meyer and Associates in Louisiana, undertook for the Corps of Engineers. This is a hydrographic chart or hydrologic chart, to be exact, showing the depths of shipping channels in the Mississippi River between Arkansas and Mississippi.

This contracting effort right here, we believe, can be parlayed into what NOAA requires on near-shore charting. And we believe will save the taxpayers considerable money. As this table from the Commerce Department Inspector General's report indicated, and I think this came up earlier, private ships work and operate and carry out this type of mapping at a much lower cost per mile than the NOAA's ships, as you can see from the chart.

But despite a small increase in contracting, and there has been some contracting in this area, NOAA is still spending taxpayers'

money to operate its own vessels and upgrade its ships with new equipment, and, in fact, a lot of the equipment that they are looking for right now would compete extensively with firms who do this type of work. I personally do not do this type of work, but those firms have this equipment, it is available, it could be utilized by NOAA if research or other work had to be done rather than buying the equipment and having that equipment standing by for their own purposes as they needed them. We can talk more about that later if you wish to.

In photogrammetry, which is the process of taking precise measurement from aerial photography to produce maps, agencies again, such as the Corps of Engineers, the Geological Survey, the Forest Service, the Federal Highway Administration, and many others, have contracted out programs to obtain such services from the private sector. Until recently, NOAA had not contracted out this service. My firm, again, has been awarded one of NOAA's first photogrammetric contracts. This involves abstracting the coastline mapping from the aerial photography of the Miami project I previously mentioned. This small project is welcome, and I hope it will convince NOAA that this should be the standard approach for obtaining this type of mapping in the future. NOAA needs to set an aggressive contracting program for this type of work.

There are significant portions of NOAA's aeronautical charting program that can be performed by the private sector. As evidence, I would point to this digital State Aeronautical Chart produced by Bohannon-Houston, Inc. of Albuquerque, New Mexico, for the New Mexico State Department of Transportation, Division of Aviation. Again, this work is carried out within NOAA, and again we believe that the private sector is more than adequately staffed with equipment and technology and expertise to carry out this type of work.

Congress has assured NOAA and other Federal agencies that it need not sacrifice quality when it comes to contracting with the private sector for surveying and mapping services. Under the Federal procurement law, contracts for surveying and mapping services are awarded on the basis of demonstrated competence and qualification, not the lowest bidder. In other words, value for money. This should eliminate any doubt about NOAA's ability to select a qualified contractor for these services.

In recent years, Photo Science, my firm, has been fortunate to grow and expand at a greater rate than any time in its 42 years of history. This growth is not only attributed to new market opportunities in Federal agencies, but by our ability to recruit highly qualified personnel from Federal agencies. As the Federal Government downsizes, we have created new private sector jobs for individuals from the USGS, from the Corps of Engineers, from NOAA itself, the Tennessee Valley Authority, the Defense Mapping Agency, now known as NIMA, and we pride ourselves on our ability to assure a soft landing for former Federal employees. Photo Science is not alone in this effort. Many of the MAPPS member firms are also experiencing record growth, and many are joining me in the recruitment and the retention of former Federal employees.

So with downsizing government a reality, I strongly believe that contracting out should happen faster, and if I have one additional comment today, that is that it is not happening fast enough. We

are talking a lot about doing additional contracting, but it is just not happening. Some small projects are coming out, but they are not coming out in the volume that I believe that they should, and that really brings in another problem, and that is that we really cannot staff up for a program when we are not sure what the program is going to be. There is not yet a relationship built between NOAA and private sector the way we have with some of the other agencies, where we discuss in detail projects coming further down the line so that we can staff accordingly to ensure the work gets done in a concise and rapid manner.

It is very hard to turn around work when you do not know what is coming and then suddenly something happens. Work is requested, and you have not been given the ability to staff accordingly. NOAA has taken some initial steps towards contracting, but as I say, they have only yet begun to scratch the surface. The percentage of their work still performed in-house versus contract is small. They have learned to talk about contracting, but the amount of work, as I said earlier, is still pitifully small. In their favor, however, I should say that they have started to contract more. They are now at about 25 percent of the work be contracted in this fiscal year, and this is to their credit because only 3 years ago, just 1 percent of their work was contracted.

However, when you compare it to the other agencies, such as the USGS, the Corps, the Navy and the Air Force, it compares not that favorably because they are already at 70 percent of contracting out for this type of service. NOAA has, and I must say this, accomplished valuable work in establishment of professional and technical standards, carrying out joint R&D and funding administrative grants, etc., for other services that are intrinsically governmental in nature and not competitive to the private sector. It is not, however, the proper role of the government to perform activities that are commercially available in the private sector. NOAA should reinvent, refocus, redefine into such roles as setting standards, conducting basic research, and in conjunction with the private sector, applied research, and such research, I believe, should be promptly moved into the private sector as soon as it is commercially established and available.

I know that this work can be done because my firm has benefited from joint research and small production contracts from NOAA. There could and should be more such activity within NOAA, as I previously said. I believe that if NOAA and the other Federal agencies were to fully utilize the private sector surveying and mapping resources, organizations such as mine could triple in size. I could easily grow to 500 people with a corresponding increase in tax revenues for the Federal Government.

Our great free enterprise system is based on the laws of supply and demand. The Federal Government should not be the supplier of mapping, but it should be the demand for mapping when there is a public interest to be served. To remedy this situation, we recommend that the Congress take and enact S. 314, the Freedom from Government Competition Act, introduced by Senator Thomas of Wyoming, and of which you are an original co-sponsor, Mr. Chairman. This bill would establish a process by which the Office of Management and Budget will identify government activities that

are commercial in nature and implement a plan to contract those activities to the private sector. With specific regard to surveying and mapping, evaluate all NOAA programs in order to determine mapping that can be commercially provided. Spending on these programs should be eliminated in order to empower market forces to provide the mapping, and redirect NOAA to those aspects of mapping, to those functions and to those responsibilities that are more appropriate for government, as I have mentioned earlier. Thank you, Mr. Chairman, for this opportunity to share our views, and I would be happy to answer any questions.

Senator BROWNBACK. Thank you, Mr. Logan. I appreciate that, and I appreciate the work you are doing. All those taxes you are paying are really helping out.

Mr. LOGAN. I thought that that would be appreciated in this particular establishment. [Laughter.]

Senator BROWNBACK. Mr. Johnson, as chairman of University Laboratories branch here, we have heard some discussion of your group already. We will put your statement in the record, so if you would just like to discuss it with me, I would appreciate that as well.

TESTIMONY OF KENNETH S. JOHNSON,¹ CHAIRMAN, UNIVERSITY-NATIONAL OCEANOGRAPHIC LABORATORY SYSTEM

Mr. JOHNSON. OK. Could I read a brief synopsis of my statement?

Senator BROWNBACK. Yes, please feel free. The choice is yours. I like to do these as informally as possible. You have a lot of good information, and if you want to boil it down, then I really would like some good discussion on what you heard from the last panel and your reaction of, "yes," this is accurate or, "no," I really do not agree with this.

Mr. JOHNSON. OK. I do appreciate, Mr. Chairman, the opportunity to testify on behalf of the University-National Oceanographic Laboratory System. My testimony regards the interactions of the UNOLS fleet of oceanographic research ships with the National Oceanic and Atmospheric Administration. I do this in my capacity as chair of UNOLS, which is an organization of 57 academic institutions and national laboratories from 27 States. I will just summarize the structure of UNOLS, the status of our fleet and our current operations before I discuss the NOAA-UNOLS interactions and the services that the academic research fleet can and does provide to NOAA.

UNOLS institutions conduct ocean science research and education programs, and they may operate oceanographic research vessels. We are joined for the purpose of coordinating oceanographic ship schedules and research facilities to maximize their efficient use. This coordination is governed by one simple reality: Every extra dollar used to support ships is one less dollar for science. UNOLS ensures cost effective access to the ocean for all of the Nation's scientists. UNOLS is now in its 25th year as the world leader in oceanographic facilities. The 27 research vessels in UNOLS fleet stand as the largest and most capable fleet of oceanographic re-

¹ The prepared statement of Mr. Johnson appears on page 69 in the Appendix.

search vessels in the world. It is a substantial national asset. There are five, soon to be six, large Navy-owned, university-operated ships in the fleet, eight UNOLS vessels that are owned by the National Science Foundation, and the remaining 14 ships are owned by State and private institutions.

The UNOLS fleet is utilized by scientists from all of the States and many institutions beyond those that are UNOLS members. These seagoing facilities provide the platforms in which the bulk of American oceanographic research is performed. The UNOLS fleet is generally in its best condition ever. We are nearing the completion of a decade that will see about \$200 million in capital improvements to the fleet that have been funded by the Navy, by the National Science Foundation, by various State governments, and by private institutions. We are very grateful for the support of Congress and all of these organizations. This support will ensure that American scientists can collect the data needed to manage the oceans wisely.

As a result of this support, all of the large Class I ships in the fleet are new or they have undergone major mid-life refits. Most of the intermediate ships have undergone major mid-life refits during the past 5 years. Significant upgrades to several small coastal vessels have just completed or will soon begin. However, with a projected lifetime of 30 years for an oceanographic vessel and 27 ships in the fleet, we must continue to plan for modernization and new construction at a rate of nearly one a year. Funds have been appropriated by Congress for a new Navy-owned ship to replace the aging *Moana Wave*. New ships to serve coastal research in Alaskan waters and mid-Atlantic waters will soon be required to replace the oldest ships in the fleet.

The fleet itself supports research that is funded by a variety of State and Federal agencies. The National Science Foundation has provided the greatest amount of support, more than 60 percent of the total. The Office of Naval Research and NOAA are also substantial users of the fleet. The fleet is projected to operate for 4,900 days in 1997 at a cost of about \$50 million. The fleet typically operates throughout the world's oceans but most operations are off the U.S. coast. Owing to some declines in Federal budgets and the delivery of new ships, the UNOLS fleet has some excess capacity. This increases the daily rate for ships in the fleet that do not have full schedules because fixed annual costs must be spread over fewer days.

We have, therefore, sought out other Federal and State agencies to utilize the substantial national asset in order to optimize operational costs. These interactions reduce the cost of ship time to all of the agencies that use the UNOLS fleet including NOAA. Our interest has not been in displacing the oceanographic fleets of other agencies, but rather in supplementing them. We are poised to be able to do this easily and cost effectively. A significant feature of the 1997 schedule, for example, is the addition of 393 operating days for the Naval Oceanographic Office. The work with NAVO was one example of our effort to find new partners for the UNOLS fleet.

NOAA is another agency to which UNOLS ships have traditionally provided seagoing support. NOAA has three primary missions

requiring ships, surveying for coastal charts, fisheries assessment, and research. Our interactions have been mainly with the NOAA Office of Ocean and Atmospheric Research, OAR, which is the primary research office at NOAA. OAR performs research and monitoring that is very compatible with the capabilities of UNOLS ships.

As NOAA has begun to retire the oldest ships in their fleet, the UNOLS fleet has provided increased support to NOAA, especially OAR. NOAA will use about 337 operating days during 1997 in the UNOLS fleet at a cost to NOAA of about \$3.5 million. This will be their highest level of participation in the last 5 years. In recognition of the need for NOAA to find access for the scientists to the sea and the desire of UNOLS to find other Federal agencies to support the fleet, we are developing a memorandum of understanding between NOAA Office of Ocean and Atmospheric Research and UNOLS. Major points of the proposed MOU include the following:

The new NOAA research vessel *Ronald Brown* will enter the UNOLS ship scheduling process. NOAA will provide funding equivalent to that required for annual operation of the *Brown*. Some of those operations, of the NOAA operations, will be on the *Brown* and some will be on UNOLS vessels to take advantage of the distribution of the UNOLS fleet as Diana Josephson mentioned. UNOLS scientists will be scheduled on the *Brown* when it is not performing NOAA work and when and if it is cost effective to do so. This is the cost comparison that Diana Josephson mentioned. This will provide NOAA with much greater flexibility in scheduling ship time as a single ship cannot meet their multi-ocean requirements without conducting excessive transits.

Academic scientists will have access to the specialized atmospheric research capabilities of the *Brown* as well as its general purpose capabilities. In order to equitably trade days among ships of different sizes, NOAA will account for the operational costs of the *Ronald Brown* on a similar basis to that used by NSF and ONR. In addition to the equivalent of 1 year of ship time to support the *Brown*, NOAA will also outsource approximately \$2.6 million per year in ship requirements which is about half the annual cost of a large ship. OAR will present these requirements first in the UNOLS scheduling process to see if we can meet them.

Under the proposed MOU, UNOLS will provide approximately 20 to 25 percent of the \$12.9 million that OAR spends annually for ship time. While the *Brown* will be scheduled in the UNOLS process, it will remain a NOAA ship. If necessary, most or all of the NOAA OAR research could be conducted on ships of the UNOLS fleet.

The largest requirement for ship time within NOAA is at the National Marine Fisheries Service. They budget \$25 million into fiscal year 1995 requests for ship time to support their operations. The Fisheries Service work is divided into three major categories: Fish stock assessments, marine mammal surveys, and fisheries oceanography. Their work requires two types of ships, fisheries vessels capable of towing large trawl nets for stock assessments and general purpose oceanographic vessels for the mammal surveys and fisheries oceanography. The UNOLS fleet does not now have ships with the capability to tow large trawl nets although several univer-

sities have expressed an interest in operating such ships. Most of the remaining Fisheries Service work, approximately one-third, can be performed in ships of the type in the UNOLS fleet. The UNOLS fleet already has provided some support for NOAA fisheries oceanography programs.

The NOAA National Ocean Service is responsible for collecting the bathymetric data needed to produce navigational charts. Most of their requirements for time at sea, approximately \$14 million, are in support of these charting operations. I believe that the general purpose ships of the UNOLS fleet are not well prepared to meet the rigorous legal and technical requirements of this work. It is best suited to a dedicated type of ship. The NOS, National Ocean Service, does conduct a coastal ocean program that studies safety issues such as hazardous algal blooms. The UNOLS fleet could, if necessary, provide ships for these programs.

While the UNOLS fleet can supplement the ship requirements of NOAA OAR and the National Marine Fishery Service, we do not have enough excess days available in the fleet at the current time and the current size of the fleet to replace all of their requirements. If the UNOLS fleet is fully utilized, it can provide about 6,000 operating days at its current size. With 4,900 days of operation scheduled in 1997, there is an excess capacity of about 1,000 days. That is equivalent to maybe 3 to 4 ship years or 17 percent. However, scheduling conflicts essentially prevent full utilization of the fleet. There are, for example, many more requests for ship time during summer than winter to take advantage of better weather conditions and to study the most active biological systems. It is also necessary to periodically take ships out of service for maintenance periods. These conflicts make the last 10 percent or 500 days of fleet capacity very difficult to utilize. More time may become available if access to the UNOLS fleet allows the Naval Oceanographic Office to reduce their backlog of survey requirements. The total excess, though, is going to remain somewhere in the neighborhood of 1,000 days, which would be approximately one-third of NOAA's seagoing requirements.

In summary, the UNOLS fleet represents a substantial Federal asset that can provide support to many agencies. We welcome the chance to supply the support, as it can provide educational opportunities for ocean science students, and it does reduce the ship operation costs to all of the agencies involved. As one aspect of this, we are committed to building a strong partnership with NOAA. We have worked closely with NOAA to provide support to their seagoing scientists in the past. We expect to interact even more closely in the future as the *Ronald Brown* enters the UNOLS ship scheduling process. Thank you for the opportunity to provide this information.

Senator BROWNBACK. Thank you, Mr. Johnson. I understand Mr. Palatiello—do I say that right?

Mr. PALATIELLO. Yes.

Senator BROWNBACK. You do not have a written statement; is that correct?

Mr. PALATIELLO. I apologize. I think I miscommunicated with your staff. I was invited to testify, but I thought it would be more

appropriate to have one of our members and practitioners so Mr. Logan made our statement.

Senator BROWNBAC. OK. Good.

Mr. PALATIELLO. I will be happy to help answer any questions.

Senator BROWNBAC. I need to take about 5 minutes, if I can, right now. We have a development on the CWC that I need to be apprised of. If you would indulge me for a 5-minute recess, panel members. Feel free to do whatever you need to, but then we will reconvene in 5 minutes. Thank you.

[Recess.]

Senator BROWNBAC. So much for a 5-minute recess. In a congressional break here, do not go by how we tell time. Sorry for that. It is just that we are involved in the Chemical Weapons Treaty, and that is a very pressing issue, and so I apologize for that. If I could ask you a couple of questions, and I appreciate all of your testimony and your time coming in. Mr. Logan, are you familiar with all the NOAA fleet does, everything that the NOAA fleet does?

Mr. LOGAN. No, I am not. I have a very specific view of NOAA and that is really to do with mapping, from aerial photography through mapping and charting. The work that they are doing with the rest of the fleet, I think this gentleman here is more involved with. So we are very focused on one particular part of it.

Senator BROWNBAC. OK. Does your organization, is it familiar with everything that NOAA does?

Mr. PALATIELLO. Not everything, Mr. Chairman. Our members, as Mr. Logan indicated, are involved specifically with regard to the charting, the hydrographic charting. The fisheries work, the oceanographic work, is not part of our purview, so it is only a third of the oceangoing activities that we are familiar with.

Senator BROWNBAC. OK. Mr. Johnson, you are familiar with all what NOAA does?

Mr. JOHNSON. Fairly, yes. I have general acquaintance. I am very familiar with their oceanographic research, somewhat familiar with the fisheries, and the charting and so on I just look at from a distance. We do not in the university do that explicit kind of work. In exploring some of the things that we could do, I have familiarized myself with some of their capabilities, so I have general familiarity.

Mr. LOGAN. I think together we know exactly what they do.

Mr. JOHNSON. Yes.

Senator BROWNBAC. We are going to try to make that combination. Mr. Logan, in the areas that you work in that NOAA also works in, can you provide 100 percent of their needs in those areas of the private sector?

Mr. LOGAN. Absolutely, yes.

Senator BROWNBAC. There is no doubt in your mind about that?

Mr. LOGAN. Absolutely no doubt in my mind that the membership of this organization can and could and should be supplying that. The only thing that we believe that NOAA should be doing is setting standards for the specifications of the work that we are doing. They could be doing basic research in our area of science, and then doing applied research along with the private sector to take that applied research as it becomes commercial into the private sector, and I have the experience of doing that, and it works

very well, but the problem we see with NOAA is we get this little tiny piece of it, sort of the crumbs that fall off the table, and we never seem to be able to get the momentum up to really do what the other agencies have been managing to do in the last number of years, and that is going from relatively little contracting to a large amount of contracting.

Senator BROWNBACK. You are saying they are 25 percent of contracting. The rest are at 70 percent?

Mr. LOGAN. They are at 25 percent right now. At least that is what their proposal is, 25 percent, but if you look at some of the contracts that they have already let this year, they have actually put a hold order on those because they say they do not have the funding anymore to do them. So, in fact, I am not sure what the final number will be because some contracts were let and now there is a hold on those contracts.

They say that they do not have the funding. This is an issue—while you were out we were talking about this, saying that they cannot contract because they have been downsizing, and the government takes, the Congress takes this money away when they downsize and they have no money left to contract with. So I mean we are standing there saying, well, how can that be? I mean there must be some funds in your budget that allows you to contract, but they say no. So we do not know where that funding is going, but it is certainly not going into contracting right now.

Senator BROWNBACK. Can you provide it on a cost competitive basis with the current NOAA fleet, and you heard the Under Secretary, the Deputy Under Secretary comment about, well, yes, we have bid these out, but they are not competitive.

Mr. LOGAN. Yes. I think if you look at the fact that most of the other agencies have gone forward and contracted and must believe that they are getting value for money or they would not be doing that, I do not see why NOAA who has similar needs would be any different than those other agencies. And when I see the work that they do, it has got to be more cost effective. In our testimony that was entered for the record, you will see a project that was for some relatively small piece of flying in Alaska, and they actually mobilized an aircraft from Florida to go to Alaska to do that flying. Now if you can tell me that that is a cost effective way of doing work, I would like to know because I could certainly utilize it in my organization. I mean it is just not a cost effective way to do it. We have a member firm in Alaska who is approximately 100 miles, based 100 miles from that particular project with aircraft capable of doing the work. So those are the sort of examples that we have.

Senator BROWNBACK. What about her figures or the figures I gave you about the cost per day of operating the NOAA ships that range on the upper end at \$21,000 per day to \$8 to \$9,000 per day. Is that competitive? How does that compare to your numbers?

Mr. LOGAN. Well, I do not know about the ships, but let me tell you something about the aircraft. We fly aircraft that are more than capable of doing the work required but our running costs would be approximately a third of one of the jets that NOAA flies. NOAA flies an actual jet to take photography, a full-blown jet. We fly either turboprops or piston aircraft. When I say we, I mean our association, our member firms, and there is just no way that you

can compete with that because it is not that they are flying vast areas. They are actually flying quite difficult tidal areas which is not a vast amount of flying. It is just getting the right amount of weather, the right tide, etc., at the same time. So that cannot be an effective way of doing that.

They tend to run three or four crew members per aircraft depending on the aircraft. The private sector runs two and sometimes one. So again, this has got to be a more efficient way of doing it, I would have assumed. But the actual cost of the ships, I would pass that over to my colleague here to—

Senator BROWNBACK. How does that compare to your fleet of ships in the cost?

Mr. JOHNSON. A comparable sized ship in the UNOLS fleet, the \$21,000 day would, I believe our most expensive day rate in 1997 will be \$18,000, somewhere between \$17 and \$18,000 per day. At the lower end, they range down to \$3,000 per day. So at that rate, they are more expensive. \$21,000 is higher, but what is that—20 percent or 30 percent higher.

Mr. PALATIELLO. Mr. Chairman, let me just reinforce something that Mr. Logan pointed out. A cost per day is not something that I am familiar with, and I know in conversations I have had with folks from NOAA, they dispute the findings of the IG, but the IG did it on what I think is a more equitable way of doing a comparison and that is the cost per linear mile. And what they found is that the private ships are far more cost effective than NOAA's ships. Now, some areas you can do more linear miles per day than you can in other areas because of varying conditions and variables that play in, and I do not know how this would translate into a per day cost, but I think this is a pretty dramatic exhibit of the differences in the costs.

Senator BROWNBACK. And probably more accurate, what you are after is the mapping on a linear mile basis in that particular case.

Mr. LOGAN. Yes. You could have a very good daily rate for a particular vessel, but if you are not getting anything achieved, what have you achieved?

Senator BROWNBACK. I have had days like that.

Mr. JOHNSON. Yes, we all have.

Senator BROWNBACK. Mr. Johnson, you are saying that the fleet of ships you represent could do a lot more of the work that NOAA is doing, but not all of the work that you know of. Now is that because of a lack of capacity on your part or is it a lack just of the technical expertise?

Mr. JOHNSON. Well, a bit of each. We probably could do all of the oceanographic—we have enough excess capacity to do most of the oceanographic research. We do not have the actual hulls/equipment to do the deep trawling that Admiral Stubblefield was referring to, the towing of essentially a commercial trawl net, very large net. Our ships have never been built to do that capacity. There has been sort of a gentleman's agreement that NOAA would do that, and UNOLS would do oceanography.

Senator BROWNBACK. Mr. Johnson, part of the things we have been doing in this Congress has been that as we move and we make, end the era of big government, somewhere down the line, and we are not there yet, is trying to project into time line, saying,

OK, if we are going to make these transitions, if we are going to privatize the NOAA fleet operations, you need to give some time window for people to build up either the private or in your case other sides of the public sector.

How much time window would we have to give to your organization, to others, to say, OK, we are going to decommission this fleet and there is going to be sufficient capacity in other places to do the same quality of work in a cost competitive basis? How much time?

Mr. JOHNSON. I would say probably at a minimum close to 5 years. In the UNOLS fleet, we typically start to plan a new ship in a 10-year process, but that is starting to build the case then at National Academy of Sciences, too, for the appropriation to go to Congress for the money and so on. To actually sit down and start to work on the design of the vessel and go around to the community, find out what it really needs to be able to do, it is a very critical process because the ships are expensive and you do not want to not build the right capabilities into it.

Senator BROWNBACK. And that is in the piece and the portion of NOAA that the private sector does not have current capacity in. Do you know how many of the NOAA ships are focused in that particular area?

Mr. JOHNSON. I believe Diana Josephson said nine of the ships are doing deep trawling. I do not know that they actually use nine ship years. They often go off and do other things as well. They own nine now that are doing that kind of work. I am not sure. It might be maybe 5 or 6 actual years of work doing that, I think.

Senator BROWNBACK. Mr. Logan, how about the sector that you are familiar with in NOAA that you have worked on? How much transition time is needed for the private sector to tool up to be able to do that work?

Mr. LOGAN. On the aerial photography side, I would say by 9:30 this morning, we could have been ready to roll on that. That capacity is there throughout the country. It is there and ready to be used. On the mapping side and the charting side, I think it is just getting to understand and know the specifications and therefore allocating the personnel to it. If we know that these programs are going to be put in place, it is a matter of weeks or months at the most that we could be ready to do that type of work.

On the geodesy side, it may take a little bit longer, but certainly I would say it is months and certainly not a year to get that moving. And so it is in all the areas that we work in. The capacity is there. It is more familiarization of what NOAA's standards and requirements are because we have not been able to build on those because we do not do that type of work for them.

Mr. PALATIELLO. Mr. Chairman, let me embellish on Mr. Logan's comment. There are a couple of areas where I think it would take a longer transition. For example, there is not a big private sector market for hydrographic surveying today because it is dominated by the government, and government agencies are deploying their own ships. So there would be some transition time for firms in order to capitalize, to have the larger ships to go farther offshore and what have you. As Mr. Logan said in his prepared testimony, the Corps of Engineers is responsible for the inland waterway system. They do a huge percentage of that work. The last estimate I

saw was something in the neighborhood of 40 percent—I think it is much more than 50 percent now—of that work is done by contractors to the Corps of Engineers. It is very similar to work to what NOAA is doing offshore, although the more you go out into the ocean, the larger the vessel you would need, and so there would be some requirement for more capitalization on the private sector, and there would be a need for a transition period.

But it is kind of the if you build it, they will come situation. If the private sector knows that there is going to be a market there, certainly they will make the capital investment to go after it. So on something like that, there would be a transition period. In regard to your earlier question about is the capacity and capability there? From a technical standpoint, the answer unequivocally is yes. There are other issues that I think NOAA would point to that are somewhat impediments to contracting today.

First and foremost is liability both on nautical charting and aeronautical charting. We have had an honest difference of opinion with NOAA on these issues. They seem to not be able to handle this the same way the Corps of Engineers does, which is simple errors and omissions insurance. Right now on the nautical charting contracts, first, NOAA is requiring insurance that is not commercially available. Our members have gone to Lloyd's of London, and Lloyd's of London will not write the insurance that NOAA has put on the table in negotiations.

Second, they are requiring that a NOAA officer go on the ship of the contractor in order to perform some quality control functions. That is not a particular problem. It is probably a good idea. Then third, is they are still insisting that they have to go out and spend millions of dollars on their own equipment to check the contractor's work. Well, I do not know how you check a contractor's work in nautical charting unless they are going to send their ship out with this equipment and remap the same area the contractor just did. We have heard the old expression about a belt and suspenders. Well, they have got a belt and suspenders and I do not know what else, but they have got three different sets of quality control they are trying to put on these contracts. They are saying the reason for that is because of liability.

Well, it seems to me there is just not a can-do attitude about contracting. They seem to be putting this up as an impediment to contracting. They can indemnify their contractors if they desire. And as you pointed out in your questioning of Dr. Josephson, if they lack the legislative authority to indemnify, I haven't seen them come to the Congress and ask for the authority. Rather they are imposing all of these unattainable burdens on contractors. We have members that are sitting down negotiating with NOAA right now, and they are getting ready to walk away from the table because NOAA is asking them to present evidence of insurance that is just not commercially feasible.

We were through this debate with them 10 years ago, and I can go through that story with you if you have a moment, but it was a deal killer 10 years ago. They did one of the cost comparisons you asked about. And they had a provision in at that time that said each contractor had to have \$100 million worth of liability insurance in perpetuity so that if you did the survey today, and a ship

ran aground 25 years from now, they wanted the contractor to be covered 25 years from now and have the insurance on a claims made basis. Well, again, we went to NOAA and said you have put this requirement in the contract. Clearly, you must have done some sort of market study to determine that this is something that a contractor can get. My members have been telling me they cannot get this insurance. And NOAA said, oh, yes, we have done a study, and that insurance is available, and we said, well, can you point us in the right direction because we cannot find it? And they said, no, you have got to file a Freedom of Information request. So we did, and the answer came back that the survey was conducted by telephone and no documentation existed. There was never any such survey conducted. That was put in, that was on one of these A-76 studies, and it was over, they said the activity stays in-house, there is no private sector capability, because they put in a provision that the private sector could not meet.

On that particular cost comparison, they set that aside for small business. And no small business responded. So they said competition is over, the activity stays in-house. They never opened it up to larger firms. So these are the kinds of things that we have been going through with NOAA in terms of trying to go through cost comparisons, trying to do an analysis of private sector capability, and there seems to be more roadblocks than there is a desire to knock down the roadblocks.

Senator BROWNBAC. Of the areas you are familiar with NOAA operating, Mr. Palatiello, there is no doubt in your mind that the private sector if not immediately could quickly ramp up to meet those areas that you are familiar with in NOAA; is that correct?

Mr. PALATIELLO. Unequivocally.

Senator BROWNBAC. And what areas do you contend you are not familiar with that NOAA is currently doing that you would be uncertain about that statement? Are there other areas?

Mr. PALATIELLO. In terms of technical capability, in the areas that we have been discussing, it resides in the private sector. Again, there are some other issues like liability that might need to be worked through, but in terms of the technical competence of companies in the private sector—

Senator BROWNBAC. What about this trawling issue? I am a farm guy. Is there private sector capacity to do this?

Mr. PALATIELLO. I think that is more Mr. Johnson's field than ours.

Mr. JOHNSON. For the kind of work that NOAA is looking for, there is not, I think, a real direct equivalent to the NOAA ships out in the private sector right now. I believe that there are companies that would be interested in building if they knew that they had a long-term commitment.

Senator BROWNBAC. How long of a commitment do they need to have?

Mr. JOHNSON. I have heard people say 5 to 10 years.

Senator BROWNBAC. That they would bid on it then?

Mr. JOHNSON. Yes, sir.

Senator BROWNBAC. If they could get a 5 to 10 year contract?

Mr. JOHNSON. Right. Yes, 10 years I think, I am quite sure you would see interest. Five years would probably be at the lower end.

Senator BROWNBACK. So Mr. Johnson, of the areas you are familiar with in NOAA, separate and distinct from Mr. Logan has spoken of, is it possible for the private sector to do this area?

Mr. JOHNSON. It depends. I mean even in the case of research, we make the argument that you want to have the ship very closely tied to the institution because of the complicated requirements. One day you may be shining a laser up in the sky and 1 day a remotely operated vehicle that you are putting in the deep sea, and that requires kind of an internal flexibility that is tough to handle in a private contract. But I think that there are companies doing that kind of work. NSF does have one privately contracted, two privately contracted ships working for them that are working. So it should be, I guess, possible.

Senator BROWNBACK. And if you are interested basically in the platform, getting that from the private sector, versus in the actual pointing of laser up or other things being operated by your scientists?

Mr. JOHNSON. Yes. Because the ship becomes an integral part of the science and that is what makes it a little bit complicated to handle the contractual details. It is rather like running a hospital, I suppose. I mean the whole thing ties together. You do not want to have multiple agencies handling different aspects of the operation.

Senator BROWNBACK. Do you have any doubt that if you offered a private company any of the operations within NOAA for a 10-year contract to provide the platform for this work, that you would get bids from private sector companies to do that?

Mr. JOHNSON. You would get bids, yes, but with what NOAA can do as they have revamped their operation, there is only one way to find out.

Senator BROWNBACK. Has this been bid? And you are saying NSF has done some of it now?

Mr. JOHNSON. Well, we certainly have done work for NOAA.

Senator BROWNBACK. Yes, but they have private companies——

Mr. JOHNSON. Yes.

Senator BROWNBACK [continuing]. That have contracted for some of this research work that you are talking about?

Mr. JOHNSON. Yes, they have.

Senator BROWNBACK. I think you mentioned two ships or——

Mr. JOHNSON. Yes, the two ships, the icebreakers that work in the Antarctic, are run by a private firm, owned by a private firm, and then operate the charter under long-term contract to NSF.

Senator BROWNBACK. Do you know the name of that private firm?

Mr. JOHNSON. Edison Chouest Offshore. I believe ECO.

Senator BROWNBACK. We may try to get that name and number just to pursue this. Anything else, gentlemen? If not, thank you very much for joining us. It has been most illuminating.

The final panel will be Joel Willemsen, the General Accounting Office, and Joel Myers, President of AccuWeather. Thank you very much. Now who is my third gentleman here? Would you care to identify yourself?

Mr. RHODES. My name is Keith Rhodes, and I am a technical director in GAO's Office of the Chief Scientist.

Senator BROWNBACK. Very good. Thank you. Mr. Myers, I believe you have traveled in from Pennsylvania.

Mr. MYERS. Yes.

Senator BROWNBACK. I am delighted that you have joined us. Maybe you can tell us a little bit about what the weather is going to be like in Kansas when I get home, but more I would be interested obviously in NOAA and the National Weather Service and the issues there, and look forward to your testimony. The microphone is yours.

TESTIMONY OF JOEL MYERS,¹ PRESIDENT, ACCUWEATHER, INCORPORATED

Mr. MYERS. Thank you. I have submitted a copy of my testimony, and I would like to just today give a summary of those remarks and then be available for any questions.

Senator BROWNBACK. Very well.

Mr. MYERS. I am Dr. Joel Myers, founder and president of AccuWeather, Incorporated, one of the world's largest commercial weather information and forecasting companies, and chairman of the Commercial Weather Services Association. AccuWeather provides weather information and forecasts in a variety of formats for business, industry, government, and the general public. Our weather reports and forecasts can be heard on 500 radio stations across the United States, seen on hundreds of television stations, and read in thousands of newspapers and accessed millions of times a day on many of the popular news and weather Internet web sites.

As a former professor at the Pennsylvania State University, I take personal pride in the knowledge that at the time I left teaching, I had helped train 17 percent of all the meteorologists practicing in the United States. Mr. Chairman, you and your colleagues may be surprised to learn that on any given day, 85 percent of the weather information and weather forecasts, making its way to the general public, comes from private commercial companies such as AccuWeather and private sector meteorologists.

Much of the specialized weather information and forecasts needed by business, government and industry originates within the private sector. Absent the current competitive intrusion by the National Weather Service into the weather marketplace, the commercial weather industry could and would produce 100 percent of this country's specialized weather information and routine daily forecasts for public availability on radio, television and newspapers as well as on the Internet. The remarkable growth of the commercial weather industry has been achieved in much the same way as other high tech industries have grown and flourished, and that is through the ability to adapt to new technologies and to channel the innovative talents of highly skilled professionals to produce leading-edge, value-added products that are the envy of the meteorological world. As a result, AccuWeather and other commercial weather companies have a growing list of clients, both in the United States and around the world.

Accurate and timely weather forecasts are demanded by almost every sector of the U.S. economy. Without a vibrant and healthy

¹ The prepared statement of Mr. Myers appears on page 78 in the Appendix.

commercial weather industry, the cost of producing all of these products might fall to the government with a corresponding price tag that would greatly eclipse the current cost of the National Weather Service budget and operation or simply not be produced at all. A technologically advanced and financially strong weather industry is vital to the U.S. economy. Equally, a strong commercial weather industry is key to future downsizing within the National Weather Service and also to improve severe weather warnings by the Weather Service.

The National Weather Service of today is a creature of the Organic Act of 1890. That act, passed 107 years ago at the dawn of the electronic revolution, created the U.S. Weather Bureau within the Department of Agriculture. The Weather Bureau has since become the National Weather Service within the Department of Commerce. It might have made sense in 1890 to give to the Weather Service a broad charge for making weather forecasts for the public and selected industries. After all, back then there was not a single commercial weather company.

A commercial weather industry began after World War II and has over the past 50 years growth to include 100 companies in the U.S. and many more abroad. And the electronic revolution including the invention of radio, television, computers and the Internet was not part of the landscape back in 1890. The U.S. Government has spent hundreds of millions of dollars to modernize the NWS. But little effort has been given to modernize the National Weather Service charter to consider its function vis-a-vis the commercial weather industry.

Some people have asked should we privatize the NWS? Should we contract out their functions? If by privatize, we are talking about selling off sections of the NWS to the private sector, the answer is no, we do not want to do that. If by contracting out, we are talking about taking some of its functions and contracting with commercial companies to perform those functions, I would say, no, we do not want to do that either. Neither of these actions is necessary. Why contract out functions that are already being performed in the private sector? Why privatize segments of the NWS that are simply duplicative of private sector efforts? The marketplace has already privatized much of what the NWS does, but the NWS continues activities that are no longer needed because they are carried out and carried out well by the private sector.

What we should be doing, I believe, is moving the NWS out of those areas where it is no longer needed and reallocating National Weather Service resources to where they are needed: Improved severe weather warnings and system reliability. A staged and systematic pullback by the NWS is needed from three areas. They are (1) user specific services; (2) services targeted to specific industries; and (3) daily public forecasts such as "partly cloudy today, 30 percent chance of showers, high in the mid 60s, sunny tomorrow, high in the low 70s." These are services that government need not provide. They are carried out very well by the private sector. Yet, a substantial portion of the NWS budget for personnel and related resources is devoted to these routine and duplicative activities which directly compete with the private sector.

NWS budget cuts should be targeted to these duplicative and competitive areas, not critical areas like the Hurricane Center or severe weather predictions. And spontaneous new unbudgeted products such as those presently being put out on the Internet with disclaimers of unreliability should be prohibited. The core responsibilities of the National Weather Service are and clearly should be as shown on these charts. This is what they are doing now.

Senator BROWNBACK. I cannot read that. Could you read some of it to me? It is just too far away.

Mr. MYERS. Sure. In the core is the observation and data gathering.

Senator BROWNBACK. OK.

Mr. MYERS. That is the satellites and the radars and the ASOS and all the reporting stations. Then, two is the atmospheric modeling. That is the computer programs that take all this data and make the forecasts. And three is the severe weather functions. The observations and data gathering and the computer programs are needed in order to make the severe weather predictions. Then four is the broad generalized public forecasts I have been talking about. And 85 percent of that reaches the public and users now comes from the private sector. And five, the economic sector and industry services and user specific services are done by the private sector, and yet the National Weather Service in some places encroaches into those. So this is what we are suggesting should be the core function in black. It makes perfect sense, and four, five and six should be left to the private sector.

Senator BROWNBACK. Do you have any idea, Mr. Myers, of the percent of budget in each of those categories? Can we calculate that? Maybe it is not calculable.

Mr. MYERS. Well, I do not know. The only budget figures I have is it is not broken out, but it says local warnings and forecasts are lumped together, and on that line item it shows 4,274 personnel, \$418 or \$451 million. My belief is that when you look at the Hurricane Center, you have 100 people or less. You look at the people needed to make severe weather warnings, flood warnings and such, you are looking at some other number of people, but it seems like the bulk of this budget is spent on putting out routine forecasts.

Senator BROWNBACK. Thank you. Please proceed.

Mr. MYERS. So what we are saying is that the three basic, one, two and three should be the core function. There is no question that doing away with other programs and forecasts which people and businesses have become accustomed to will cause expression of concern by those who are receiving these taxpayer supported services, but these services are available at very modest cost from private companies, and with a private supplier, the customer has many advantages including control over the timing of the services, the tailoring of the services to their specialized needs, and the National Weather Service should not be calling individual people to warn of an unexpected event. A private company can do that. And general public forecasts are available free to the public from private companies through all media outlets and the Internet right now supported by the outlets themselves and by advertisers.

Taxpayers should not be asked to fund routine daily forecasts of "partly cloudy today with a 30 percent chance of showers." Return-

ing the NWS to its core mission will yield significant economies within the Federal budget, will contribute to the congressional initiatives, to reduce the size of government, will bolster an industry that employs people and pays taxes, and best of all, it will enhance severe weather warnings for the American public. In fact, if the National Weather Service budget was only modestly trimmed but their mission redirected, the United States could have a better severe weather warning system that would fulfill everyone's desires.

As a step in the right direction, I fully support the initiatives to modernize the Organic Act of 1890 by Congress and by the Commercial Weather Services Association and others. Mr. Chairman, I believe the task at hand is straightforward: Change the Organic Act of 1890, refocus the National Weather Service on a set of core missions, including issuance of severe weather warnings to the public, remove the National Weather Service from private sector functions, and out of producing products that compete with those produced by the commercial weather service industry.

If in 1997, we were starting out to create the National Weather Service for the first time and to draft the Organic Act from scratch, it is clear we would focus the newly created agency on the core missions that I have mentioned, and we would not request that the agency spend taxpayer dollars to duplicate services already available from the private sector. The National Weather Service should be praised for its great effort that it has put into modernization, the tremendous advances that it and the National Science Foundation and others have funded through research and atmospheric modeling that have been translated into significant progress in the quality and accuracy of both government and commercial weather forecasts.

The National Weather Service leadership has shown vision in capitalizing on computer programming and enhanced predictions. The benefit from this should be a more intense focus on the core mission, improving the Nation's warning systems for hurricanes, tornadoes, flood, severe lightning, blizzards, etc., and the removal of the National Weather Service from those areas where it is not needed. If this was accomplished, I believe there would not only be enhanced general forecasts available to the public from commercial weather sources but better public severe weather and flood warnings from the government.

There is no need for the National Weather Service to be producing free forecasts for business and industry. There is no need for NWS to be producing daily forecasts for people who can already turn on the radio or television and get a quality forecast paid for through the forces of the marketplace. Mr. Chairman, I know that this Subcommittee cannot pass specific authorizing or appropriating legislation. I, therefore, request that you and Members of the Subcommittee recommend to the Senate Commerce, Science and Transportation Committee, who will be considering an authorization bill for NOAA and NWS this session, that they consider and pass specific legislation similar to what was approved by the House of Representatives last session. I am referring to a provision attached to my testimony that was included in the 1996 NOAA authorization bill, H.R. 3322.

I believe there is no doubt that the commercial weather industry is capable of meeting the remaining weather demands of the American public. Accordingly, I urge the Subcommittee to request a GAO study of the NWS with the objective of (1) focusing the NWS on a well defined core mission; (2) establishing the National Center for Environmental Protection as a single point source for all NWS warnings; (3) the elimination of general public forecasts; and (4) the elimination of forecasts for industry, for special interests, for end users and of value-added products.

Mr. Chairman, it should be noted that while I am talking here about refocusing the NWS on a core mission, the NWS itself is going in the opposite direction. It is looking to expand its activities and intrude upon areas that the private sector is already actively engaged in. I believe if left alone, this trend will continue because the modernization program, which the public has funded, is leading to a very significant reduction in staff needs as modern technology takes over the work that previously was done by much slower technology or by hand.

My message today is simple: Remove the NWS as a competitor to the commercial weather services industry, pull the NWS back to the borders of needed core functions, and allow the highly competitive market forces within the commercial weather industry and the public to produce the weather reports, forecasts and other products needed by industry, government, and the American people. Thank you.

Senator BROWNBAC. Makes sense to me. That was very good testimony, very interesting, too. Only wish we were on C-SPAN being broadcast so others could hear and see and have a chance to see the reasoning that you have put forward. We are at Mr. Willemssen—

Mr. WILLEMSSEN. Yes, sir.

Senator BROWNBAC [continuing]. Am I pronouncing that correctly?. With the GAO. Be happy to receive your testimony and I would love to have some interaction, and I have some questions for you.

Mr. WILLEMSSEN. OK.

TESTIMONY OF JOEL WILLEMSSEN,¹ DIRECTOR, INFORMATION RESOURCES MANAGEMENT, ACCOUNTING AND INFORMATION MANAGEMENT DIVISION, U.S. GENERAL ACCOUNTING OFFICE, ACCOMPANIED BY KEITH RHODES, TECHNICAL DIRECTOR, OFFICE OF CHIEF SCIENTIST, U.S. GENERAL ACCOUNTING OFFICE

Mr. WILLEMSSEN. Thank you, Mr. Chairman. Thank you for inviting us here to testify on the National Weather Service's modernization program. Mr. Rhodes is accompanying me today because of his in-depth expertise in computer and telecommunications issues. As agreed, I will give a brief 5-minute summary of my statement and request that the full statement be inserted into the record.

Senator BROWNBAC. So ordered.

¹ The prepared statement of Mr. Willemssen appears on page 91 in the Appendix.

Mr. WILLEMSEN. At an estimated cost of about \$4.5 billion, the Weather Service modernization program is one of the largest in the Federal Government. The modernization is critical to the Weather Service's plans for improving and downsizing operations. However, the program has faced persistent challenges that must be overcome if the full benefits of the modernization are to be realized. Our concerns with the Weather Service modernization have led us to place it on our list of high risk government programs.

In implementing the modernization, the Weather Service has been acquiring new observing systems: Radars, satellites, as well as forecaster work stations. Implementation of most of these systems is nearing completion, and they have already been instrumental in providing some benefits in improved warnings and forecasts. Despite those improvements, however, the AWIPS system, which is designed to process and analyze the large volumes of data coming from those other systems, has had continuing delays and problems. This has prevented full utilization of the data coming from radars, satellites, and automated surface observing systems.

The Weather Service's progress to date in resolving these problems has been mixed. We continue to be concerned about risks in the development of AWIPS, risks that will threaten the system's ability to be completed on time and within budget. Until AWIPS is deployed and functioning properly, the Weather Service will not be able to take full advantage of the nearly \$4 billion that have already been invested in the modernization to date. With recent changes to the AWIPS program, significantly more design and development responsibility has been transferred to the government, in particular the Forecast Systems Laboratory.

We have previously reported on our concerns and made recommendations on this lab's capability to produce software. Weather Service officials assure us that they intend to improve the government's development process and mitigate the risks of producing unstable and unreliable software. However, to be effective, these plans must be implemented. And even with full implementation of these risk mitigation plans, it is likely that unforeseen problems will result simply because of the complexity of this effort, problems that the current cost and schedule estimates do not account for. Therefore, it is imperative that top NOAA and Commerce managers acknowledge the likelihood of these unforeseen problems developing that will require more time and money than currently estimated.

Mr. Chairman, for a moment, let me also turn to NOAA's acquisition strategy for another critical component of the modernization, the GOES satellite system. These satellites are positioned to observe the development of severe weather and provide information to forecasters to issue accurate and timely warnings. Current GOES satellites will begin to reach the end of their useful lives about 2002. Therefore, NOAA plans to purchase an interim series of two to four satellites quickly to prevent a gap in coverage as the current series runs out.

We believe this strategy is fairly reasonable, given that there is not enough time to develop a new design. However, we are concerned that NOAA is not initiating an effort to develop a new satellite system for the longer-term future after this interim purchase

of two to four satellites. We believe that the potential exists for improving the system and reducing costs in the long-term. A new design might better meet the evolving needs of forecasters and improve performance as well as reduce costs. Given that options may exist for NOAA to develop a significantly improved follow-on GOES system, the Congress may wish to closely examine the costs and benefits of different approaches for the timing, funding, and scope of the follow-on program.

In summary, Mr. Chairman, we are supportive of the modernization program. It has made a lot of progress to date and many achievements, but there are still risks, in particular risks with the AWIPS system, and until we have that system up and running, we will not get the full benefits of the modernization. That concludes a summary of my remarks. Thank you.

Senator BROWNBACK. Thank you. Mr. Myers, how much information do you use from the National Weather Service in what you do in your services that you provide at AccuWeather or within the commercial weather service? Do you use any of their information, a lot of it, none of it?

Mr. MYERS. Yes, we use all of it we can get. We get data from private sources and government sources including the National Weather Service, but let me say that nothing special is done to it for us. It is much like Census data or economic data that economists get. It is data that the government has gathered for its own uses, and whatever they have for their own uses they make available, and we simply plug into it and take it in the format, whatever they have. Then we do a lot of massaging with it, add value to it. Our forecasters use it as the basis for making their forecasts that they then reissue.

Senator BROWNBACK. Now would that information continue to be available in your suggested redesign of the National Weather Service where they would focus back on core mission, as you put it, the observations and data gathering? You would continue to receive basically the same information you are receiving today you would suggest on your redesign of the NWS?

Mr. MYERS. Probably. I think it is important that the National Weather Service maintain control of the observations because that is at the core of all of the severe weather warnings that they would provide that the military uses for the basis of its forecasts, that the commercial side, television meteorologists, individual firms and so on, use as the basis of their forecasting as well as the National Weather Service issuance of severe weather warnings and advisories.

So in other words, all these observations, radar pictures, satellite imagery, individual weather reports that the National Weather Service gathers and there is also reports that the FAA and the military gathers. There are ship reports at sea, there are reports from all the different countries from around the world, satellite imagery from other countries, all of this is fairly exchanged around the world, and it is available to just about anybody to plug into and get. The National Weather Service needs to have a good observational system in order to issue the warnings and the advisories that they put out.

Senator BROWNBAC. And you would continue that and indeed refocus maybe even greater emphasis in that category?

Mr. MYERS. I am not sure I—

Senator BROWNBAC. Are there more raw data needs than are being met, do you believe, by the National Weather Service in what they need to predict severe weather warnings, do some of these other things that are the sources for military predictions? Do they need more raw data?

Mr. MYERS. Well, I think this goes to these comments of how effective are the satellite observations? A couple years ago, we were down to one satellite. Certainly that threatens the forecasting in general around the country. So it goes to the modernization. The observations have to be of a certain quality. The radars have to be maintained. This is the core, the basis of all weather prediction, whether it is done by the military, whether it is done by the National Weather Service or the private sector.

Senator BROWNBAC. Mr. Willemssen, would you care to respond to that?

Mr. WILLEMSSEN. Certainly. I think when the AWIPS program comes on line and is fully operational, there will be a tremendous escalation in the kind of benefits and the kind of data that will be provided to forecasters. You will have, I believe, 70,000 data sets that will come together from NEXRAD radars, automated surface observing stations, and also the satellites. As it stands now, forecasters have to take that information from each of the separate sources. It is not integrated and brought together. The other key thing that the AWIPS will give you is it will have additional decision-making support tools so that a forecaster does not have to do these tasks manually. Instead, it will be on the screen. So I think if we can get the AWIPS capability up and running, you will see a tremendous advance in the kind of capability, the kind of data, that is available.

Mr. MYERS. I might just add to that, though, with all due respect, the private sector has already done a lot of that and for a lot less money. For example, with respect to radars, the National Weather Service has all these individual radar sites all over the country, and they have 100 and some radar sites, and in each place they only have the data for that single radar and maybe one other. We bring all the radar data in from all the sites and combine it already. So we have a composite radar. When you watch television, you see a radar for the whole country. Well, that does not come from the National Weather Service. That comes from us and a couple of other companies like AccuWeather that take that data and have already figured out how to integrate it and take off the death rays and the donut holes and so on that are just spurious and make it available to the public or meteorologists who want to use that to make forecasts or to understand what the weather patterns are. So a lot of things the National Weather Service is still trying to do for tens of millions of dollars has already been done by the private sector for less.

Senator BROWNBAC. Do you think we do not need to continue with this modernization program or do you feel comfortable responding to that?

Mr. MYERS. Well, might I just say, could I just add one thing?

Senator BROWNBACk. Please.

Mr. MYERS. I wonder if we could put in the record the full text of my comments, the public-private sector agreement, published in The Federal Register in 1990. I forgot to mention this when I started. And a copy of the National Weather Service WeatherNet Internet sites, and I can supply all those to you.¹

Senator BROWNBACk. Yes, please, and it will be put in the record.

Mr. MYERS. Thank you very much. I think if we were starting over—I am not sure if it is still possible, but there probably should be many fewer National Weather Service sites.

Senator BROWNBACk. Than the 100 that are around?

Mr. MYERS. They have 117 or whatever. Originally back in the mid-1980's when they talked about that, they considered about having as few as 25 sites. We, for example, do forecasting for the whole country from one location. NWS hurricane warnings are done from one location in Miami. NWS severe storm forecasting for many years was done from one location in Kansas City. There is no need to have all these forecast centers all over the country. In fact, I have a report from the National Weather Service that clearly shows that the forecasters in each of these locations are not adding any significant skill to the basis of the forecast anyway.

The average improvement in the local forecasts from the guidance that comes out of Washington, D.C. is 0.3 of a degree on average in the first period (first 12 hours) and nothing thereafter. And if you look at some of the other forecasters, the results are mixed throughout. So what has happened is the technology and the programming has gotten so far ahead and is doing what the individual forecasters used to have to do even 10, 15 years ago, at the individual sites, but there has been so much improvement in the computer programs that take all this and make the forecasts that the individual forecasters, frustrating as it is to them, cannot really add much value or do not add any net value to those forecasts.

Senator BROWNBACk. So how many total NWS sites would we need across the country if you were redesigning the program today and to really emphasize and do a great job of severe weather forecasting for this Nation?

Mr. MYERS. Well, I have my own opinion, but I think there ought to be a study done. My opinion is you could do it all from one location just like we do it. If you have all the observations coming in, you can do it from the moon. You do not have to be able to look out the window to be able to forecast the weather. You can only see the weather 5 or 10 minutes away anyway.

Senator BROWNBACk. And we have how many different locations? You are saying 117 radar locations and how many NWS? Maybe you know, Mr. Willemssen?

Mr. WILLEMSSEN. There are approximately 200 offices currently, and under the modernization plan the number of offices will go down to about 119.

Senator BROWNBACk. Do we need 119, Mr. Myers?

Mr. MYERS. Well, I am not sure it is for me to say, but in my opinion, no.

¹ The information supplied by Mr. Myers appears on page 110 in the Appendix.

Senator BROWNBACK. Would you design it, if you were running it, with 119?

Mr. MYERS. No. You need the radars out there sending data, but you need the technicians on site to handle the radars and the same thing for the observational program, but it is really more efficient if it all comes in to one place and you have all the experts there.

Senator BROWNBACK. Is this the case of something that we designed in 1890 and then just have not really taken the time or had the political will to tackle redesigning of it?

Mr. MYERS. I think so.

Senator BROWNBACK. Mr. Willemssen?

Mr. WILLEMSSEN. Well, there was some degree of will to try to reduce the number of offices. Part of the benefit of the modernization was to cut the number of offices by about half, not obviously by the amount that has been discussed here, and the other part of that was to cut the number of staff by approximately 21 percent. So to be fair to NWS, I would not say that it was ignored. It, based on the conversation here, may not have been as fully considered as some may wish, and frankly there are other considerations that go into those kind of determinations.

Senator BROWNBACK. How many total employees at NWS?

Mr. WILLEMSSEN. There are approximately 5,000.

Senator BROWNBACK. How many at AccuWeather?

Mr. MYERS. About 310.

Senator BROWNBACK. I would be interested in your thoughts, of Mr. Myers' suggestion, of just concentrating really on the raw data collection, analysis of that, in particular focus on severe weather service. Do you think that is appropriate?

Mr. WILLEMSSEN. I think that is an alternative, an option, that maybe should be considered to the extent that it is already out there. When we have looked at the AWIPS program, that is if it works, that is going to be a very powerful tool to forecasters. To the extent that it already exists, maybe that needs to be considered. If I may, I would like to ask my colleague to also amplify on that since he is very familiar with AWIPS capabilities.

Mr. Rhodes.

Mr. RHODES. AWIPS takes a slightly different approach than has normally been made in looking at the sensor data. It goes down to the measurement data and does the graphical presentation in the workstation as opposed to accepting a product. If the government wants the Weather Service to continue to advance the state of the practice and the state of the art in atmospheric physics and meteorological science, then, yes, that does make sense. There are no technical impediments to, as Dr. Myers pointed out correctly, doing weather forecasting from the moon if you have the data.

But it is not really a technical question if you are talking about jobs and what is most important, or the legal ramification of having a bad watch or warning sent out, or what is the liability impact of having a crop failure or bad weather destroy the crop in Florida without sufficient notice?

Senator BROWNBACK. Let us build on that statement a little bit because, if I am correct, you suggest that the redundancies that are built in the system—in other words, an on-the-ground capacity virtually in addition to the radar and the other data collections and

satellites—are needed for severe weather forecasts? Am I correct in hearing you?

Mr. RHODES. Could you restate the question?

Senator BROWNBAC. Well, if I am hearing you correctly, you are saying we need this redundancy of many offices spread across the United States in case the radar information, the satellite information, is not sufficient?

Mr. RHODES. If the radar information and satellite information are not sufficient, and there are instances of very local weather phenomenon, which are some of the problem points in the decertification of Weather Service offices now, you have particular meteorological effects occurring in areas——

Senator BROWNBAC. Right. Tornadoes happen that way.

Mr. RHODES. Tornadoes, but it is not necessarily a tornado event. It is the front range effect off the Rocky Mountains in Colorado. It is the lake effect off of the Great Lakes. It is the frost effect in the San Joaquin Valley of California. Those are localized events that might necessarily take some more localized observation. Does that mean you need 119 offices, does that mean you need 200? I would have to echo Dr. Myers call for a study and Mr. Willemssen's call for additional analysis.

Senator BROWNBAC. Mr. Myers, would you care to respond to that comment?

Mr. MYERS. I think in the era of modern communication, if you have more observations on the front range or in the valley, it all can be fed across town or across the country with as much ease today, and it can come into a central location just as well as into a local weather office. Sometimes the local weather office is less equipped than a central office would be to handle that and integrate it into everything that is going on on a national scale. And those small effects are known as a result of studies and can be used whether you are there or not. Again, you cannot see those local effects out the window.

Mr. RHODES. The only thing I am thinking about, Doctor, is that in a case where I do issue a warning based on a mesocyclonic event coming in from the Doppler radar, but I still need ground truth somewhere. I mean I am still going to get with the county sheriff or somebody like that. That is not a weather office obviously, but there is some local observation requirement from the legal aspect. I can issue a watch. I can issue a warning, but I cannot really give you the exact ground direction of the progress of the tornado. I can give an approximation of where the air mass is moving and where the different layers are moving, but I cannot tell you that it is actually touched down until I get a response.

Senator BROWNBAC. But do you need 119 weather offices to tell you whether or not the tornado has touched ground, or do you need a network of being able to contact county sheriffs?

Mr. RHODES. Well, that is the other point on how you solve that problem because as Dr. Myers has pointed out, if the county sheriff in your home county calls the central office in wherever it may be, the warning can still be issued.

Senator BROWNBAC. This is most interesting. I have got to come back to one point, and then I will let you all go. National Weather Service, 5,100 employees, projecting to go to 4,028, although the

GAO reported last year that at least 61 percent of the promised staff reductions will not materialize. Is that a correct statement?

Mr. WILLEMSSEN. That is correct. I believe I recall in percentage terms the original reduction was going to be 21 percent, and I think it is now 8 percent.

Senator BROWNBACK. AccuWeather runs nationwide operation with 300 employees, Mr. Myers?

Mr. MYERS. Yes. Worldwide operation with 310 employees and 90 of those are meteorologists. I think the National Weather Service, if I could just comment, there has been tremendous progress made on the university campuses and within the National Weather Service itself in weather prediction, and because of that success, now there can be a significant reduction in the people necessary to carry out the function. Computers have been harnessed and once all these things are solved, however they are solved, with the modernization, the modernization is working, has worked, and so there can be a significant reduction in manpower and still very well do the core mission, and, in fact, if they focused on the core mission, I believe the warning, the accuracy of the warnings, the timeliness of the warnings, if there were not these other distractions, they were not looking for other things to do, would improve significantly. The private sector would flourish. The American public would have better warnings, and everybody would be the winner.

Senator BROWNBACK. It has always been my experience that if you focus on something, you tend to get it done better rather than if you are diffuse on a lot of things, and we have done that a lot in government, where we create something for a single purpose, then over the years, the Congress or administration or both say, well, you are good at this, but what about also this? And we would like for you to do that. And then they come back, and, well, we would like to do these things, and by the end of the day when you are on five missions instead of one you are not doing any of them really well, and you are forgetting your real core function, which is a lot about what I think a number of us were elected to Congress to do, which is to get back to basics and do what we should be doing better.

So with that, I very much appreciate the panel. It has been very enlightening. I appreciate that and your input, and anything further you would have, please feel free to give us. With that, the hearing is adjourned.

Mr. WILLEMSSEN. Thank you.

Mr. MYERS. Thank you, Mr. Chairman.

[Whereupon, at 3:07 p.m., the Subcommittee was adjourned.]

APPENDIX

TESTIMONY OF

**DIANA JOSEPHSON
DEPUTY UNDER SECRETARY FOR OCEANS AND ATMOSPHERE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE**

BEFORE THE

**SUBCOMMITTEE ON OVERSIGHT OF GOVERNMENT MANAGEMENT, RESTRUCTURING
AND THE DISTRICT OF COLUMBIA**

COMMITTEE ON GOVERNMENTAL AFFAIRS

U.S. SENATE

APRIL 24, 1997

INTRODUCTION

Thank you, Mr. Chairman, and members of the Subcommittee, for this opportunity to appear before you today to present highlights of the National Oceanic and Atmospheric Administration (NOAA) management reforms. NOAA has been very fortunate to have had experienced and effective Secretaries and a dedicated and stable management team during the Clinton Administration. The late Secretary Brown and Secretary Kantor's dedication to the goals and mission of the Department and the role which NOAA plays within this mission, has created a culture that encourages the innovation required as America moves into the 21st century. Dr. D. James Baker has led the effort within NOAA to become more streamlined and results-oriented and is committed to continue building on this foundation of management reform and improvement. The Nation's domestic security and global competitiveness will depend on the types of capabilities, services and products delivered by NOAA.

NOAA ROLE: DOING WHAT'S NEEDED

The mission of the National Oceanic and Atmospheric Administration (NOAA) is to describe and predict changes in the Earth's environment, and conserve and manage the Nation's coastal and marine resources to ensure sustainable economic opportunities. This mission involves basic responsibilities of government for ensuring general public safety, national security and environmental well-being, and promoting economic growth. Products and services include weather warnings and forecasts, environmental technologies, marine fisheries statistics and

regulations, nautical charts, assessments of environmental changes, and hazardous materials response information. These capabilities, products and services support the domestic security and global competitiveness of the United States, and affect the lives of nearly every citizen every day.

STRATEGIC PLANNING PROCESS

NOAA has implemented a strategic planning process which defines and validates our business activities, guides the development of operating plans, and forms the basis for management decisions. The NOAA Strategic Plan provides the framework for articulating and organizing goals and work objectives. NOAA's goals for the future will enhance opportunities for our citizens, the health of the U.S. economy, the protection of our environment, and the sustainable use of our national resources.

The challenge of investing strategically in the Nation's future is accompanied by the requirement to be more effective, to identify and realize opportunities for savings and to focus the efforts of Government on what matters to people. Performance is what counts, and the FY 1998 budget includes measures which track results to the level of investment. Success in this changing world increasingly will depend on partnerships with business and industry, universities, state and local governments, and international parties. NOAA will continue to develop partnerships to leverage resources and talent, and provide the means for meeting program requirements more effectively.

GOVERNMENT PERFORMANCE AND RESULTS ACT (GPRA)

NOAA is strongly committed to implementing the GPRA. NOAA has made the GPRA operational following strong participation as a pilot agency and will continue to support the Department's effort in developing the Commerce Strategic Plan.

During the pilot period, NOAA was selected by the Office of Management and Budget as one of ten exemplars and was commended by the GPRA review panel of the National Association of Public Administration (NAPA). We have worked with the General Accounting Office to identify best practices for Federal agencies to follow, and we are contributing to the National Performance Review's Benchmarking Consortium Study for performance measurement. NOAA views the GPRA as a management tool to facilitate decision-making. NOAA has integrated performance measures into its planning, budgeting, and management review cycles, and is designing a program evaluation process to measure agency-wide progress toward meeting goals.

GOVERNMENT MANAGEMENT AND REFORM ACT

This Act authorizes six franchise fund pilots to provide common administrative services on a competitive basis to other government agencies. NOAA's Administrative Service Centers (ASC) serves as one of only six OMB approved pilot activities for this effort. As in the private sector, the ASCs will be responsive to customer needs and will only succeed if they meet their customer's requirements for timely and high quality products.

REDUCING COSTS AND IMPROVING EFFECTIVENESS

In an environment of tightening dollars and increasingly complex challenges, NOAA is reducing costs and improving program effectiveness. NOAA is saving money through streamlining personnel and processes, outsourcing where appropriate, and leveraging external resources and talent. NOAA holds managers accountable for results, and for using performance measures to validate progress. The highest priority continues to be to ensure that critical services are provided well. To help meet budget goals, NOAA has proposed in the FY 1998 budget terminating a number of lower priority programs. These terminations will result in an FY 1998 savings of \$15 million.

In an effort to reduce red tape, improve customer service and form alliances and partnerships to better serve the American public, during the past 12 months, NOAA has eliminated or streamlined 20 percent of its regulations.

REENGINEERING OF THE NATIONAL WEATHER SERVICE

The modernization of the National Weather Service over the past several years has been and continues to be an example of the principles of the 1996 Clinger-Cohen Act. The practices utilized by the National Weather Service in reengineering, integrating information, and purchasing systems which employ open architecture scenarios will ensure that the technology utilized provides a workable solution to real problems at a reasonable cost.

In FY 1999 the National Weather Service will complete a major weather forecast office modernization program. This initiative involves restructuring the duties of its forecasters, using advanced workstations to increase their productivity, and the accuracy and timeliness of weather forecasts. The Advanced Weather Interactive Processing System (AWIPS) will help provide—along with Next Generation Weather Radar (NEXRAD) and the new GOES satellites—greater advance warnings for tornados, giving communities more time to take appropriate precautions, such as moving children off playgrounds, and giving business and industry more time to protect valuable property and resources.

The National Weather Service is two-thirds of the way through this \$4.5 billion modernization and restructuring effort that consists of deployment of NEXRADs, advanced satellites, deployment of automated surface observing systems (ASOSs) at many locations across the country, development and deployment of a new computer and communications system, the AWIPS. The restructuring of the NWS will result in the downsizing and streamlining of the current field offices from over 300 weather offices to 119 Weather Forecast Offices and 13 River

Forecast Centers and will ensure that weather services are maintained at a cost-effective level. The Nation continues to experience the benefits brought by the modernization, as the new technologies, used by trained, professional staff, have led to more accurate and timely weather warnings and forecasts to the public. A 1992 study by the National Institute of Standards and Technology found that every dollar spent on weather service modernization provides eight dollars in benefits to American taxpayers.

The NWS is nearing completion of the deployment of the NEXRAD radars, with the three additional sites recommended by the Secretary's Report to Congress scheduled to be installed by September 1997. This will bring the total to 164 radars deployed. NOAA is presently completing contract administration in preparation for contract close-out. The NEXRAD contract close-out will complete all legal requirements, fulfill Tri-Agency (DOD-FAA-NWS) responsibilities, and settle all liability issues between parties.

Nationwide deployment of NEXRADs has improved the average lead time for tornado warnings from 0-2 minutes prior to modernization to about 12 minutes in 1996.

ASOS and its continuous weather watch allows forecasters to observe atmospheric phenomena at a level of detail that has never been available before using old manual methods. The sensors are proving to be a highly accurate, consistent, and reliable complement to meteorological operations. Units have been installed at over 770 of the planned 930 FAA, NWS and DOD locations across the country, and approximately 211 of the 320 NWS sites have been commissioned.

The AWIPS program received approval on February 12, 1997 from the Secretary of Commerce to begin a limited deployment. This decision authorizes the acquisition and installation of 21 systems across the Nation, and is scheduled to be complete by the first quarter of FY 1998. Once

the AWIPS Build 3 software (out of 6 builds total) is complete and operationally tested and evaluated, NOAA will seek approval for a full production decision now anticipated in December 1997.

The President's FY 1998 request reflects minimum requirements for National Weather Service operations which will allow us to take advantage of the \$4.5 billion national investment in modernization.

Fleet Replacement and Modernization

NOAA's future ship support planning is based on the philosophy that the most cost effective acquisition of marine data is likely to be provided by a mix of charter vessels, contracts for data, university ships and NOAA ships. Our goal is to provide for effective and efficient acquisition of data, at least cost, to fulfill NOAA's statutory surveying, fisheries management and research responsibilities. The number of NOAA ships has been reduced from 25 to currently 15 active vessels; outsourcing has increased; outdated and expensive research vessels have been replaced by a converted Navy ship and a newly constructed oceanographic research vessel; and major service life extensions and repairs have been completed on a number of fisheries ships.

NATIONAL PERFORMANCE REVIEW AND STREAMLINING

In an effort to create a government that works better, NOAA is reinventing itself by achieving the goals outlined in the National Performance Review (NPR). A brief status of NOAA NPR initiatives follows:

- **Streamlining personnel and processes.** By 1999, NOAA plans to have reduced its workforce by 14 percent from 1993 levels. This will require the elimination of 2,061 full-time equivalents (FTEs) through phased annual reductions in the NOAA Streamlining Plan.

NOAA proposes in FY 1998 to begin to transfer to the Department of Transportation (DOT) the production of aeronautical charts. In FY 1998, NOAA would operate the aeronautical charting program on a fully reimbursable basis, with the entire program, including FTEs, being fully transferred to DOT in FY 1999. NOAA has simplified administrative processes, delegated authorities downward, and made progress toward implementing the Commerce Administrative Management System, which will greatly improve financial management and accountability.

- **Converging satellites.** NOAA is working with the Department of Defense to merge civilian and defense weather polar-orbiting satellites. NOAA and DOD recently agreed to defer the need for the first satellite in the system. A comprehensive program evaluation, which will include a thorough review of current cost estimates, program content, and acquisition status, will be conducted in the spring of 1997. These satellites will also provide data to scientists, the maritime industry, coastal zone managers and serve as the primary weather forecasting tool for over 100 countries.
- **Disestablishing the NOAA Corps.** Converting from a uniformed service to civilian employees is expected to result in savings to the Federal government. Disestablishment would also provide the program offices with a powerful incentive to operate more efficiently. The FY 1998 budget request calls for the disestablishment of the NOAA Corps. The Corps, which is a uniformed service, has been downsized significantly in the last two years and pursuant to the Department's FY 1997 appropriations act, will be reduced in size to not more than 299 officers by September 30, 1997. The disestablishment legislation is expected to propose that essential NOAA functions be continued through the use of civilian employees. This legislation is currently under review by the Office of Management and Budget and will be forwarded to the Congress shortly. The FY 1998 budget includes an increase of \$6 million over 1997 to

fund costs associated with the proposed disestablishment.

- **Eliminate specialized weather services.** NOAA continues to encourage development of the private weather industry. In order to eliminate the possible competition with the private sector, NOAA no longer provides specialized weather services including forecasts for agriculture, fruit frost, fire weather for non-Federal non-wildfire land management, and specialized events. The ongoing NWS modernization, resulting in new and expanded data sets, will support continuing opportunities for private companies to provide weather services. The NWS will continue to focus on its essential mission of providing forecasts and warnings critical to the protection of life and property.
- **Expanding private sector ship support.** NOAA is committed to expanding the use of private contractors and cooperative arrangements with universities for ship support to acquire critical data for charting, fisheries management and oceanographic research. In the chartering area, we have recently laid up two hydrographic vessels (the HECK and MT MITCHELL) and made \$3 million in operating funds available for private sector chartering. These funds supplement \$5.5 million in program funds which have also been redirected for private sector chartering. Pilot efforts have been completed in Long Island Sound, smaller projects have been completed off the Florida and California coasts and three new projects are out for bid in the Gulf of Mexico. Additionally, a study has been completed on the reactivation of the FAIRWEATHER by a private contractor under a potential lease-back arrangement with the government.

NOAA is also working with the UNOLS (University National Oceanographic Laboratory System) to develop a cooperative Memorandum of Understanding that will coordinate use of NOAA research vessels, in particular, the new RONALD H. BROWN. In addition to the coordination of

the BROWN's schedule, NOAA intends to acquire up to a half a year of ship time on UNOLS vessels. Our efforts to use small fisheries charters, when available, to supplement our stock assessment work will continue. About 30 per cent of our total days-at-sea requirements are presently met by contracts--mostly with fishing firms. Beyond chartering, NOAA has underway an A-76 review of the operations of the KA'IMIONANA and intends to conduct other such reviews in the future for other vessels.

- **Transforming seafood inspection.** The National Performance Review and the Administration's FY 1998 budget request identifies the Seafood Inspection Program as one of nine organizations government-wide which, through legislation, will be converted into a performance-based organization (PBO). PBO's are discrete units of a department that will operate in a more business-like manner to better serve the needs of its customers while retaining its status as a Federal entity. Once designated, the PBO would be headed by a competitively hired Chief Operating Officer whose continued service would depend on successful achievement of performance goals. The PBO would remain a Federal entity.
- **Improving fisheries management.** In cooperation with the fishing industry, NOAA will implement access controls for 25 of 39 Fishery Management Plans by the end of FY 1997. Under new legislative authorities in the Magnuson-Stevens Act, NOAA will work with stakeholders to establish user fees for individual fishing quotas in certain Alaskan fisheries.
- **Streamlining regulations.** NOAA is revising and streamlining 70 parts of the Code of Federal Regulations and eliminating 400 pages. This will reduce the reporting burden on the public, and reduce by 27 percent the reporting burden hours of the National Marine Fisheries Service.

COMMITTEE ON ENVIRONMENT AND NATURAL RESOURCES

Through the National Science and Technology Council's (NSTC) Committee on Environment and Natural Resources (CENR), NOAA works with other federal agencies and non-governmental experts to design and prioritize the government's environment and natural resources research and development agenda. This interagency planning and coordination ensures the effective application of available resources.

The NSTC has identified Improving Environmental Quality as one of its six goals. Improving environmental quality requires supporting a broad and comprehensive research agenda, including: 1) observing, documenting, understanding, assessing and predicting environmental change and its consequences; 2) using natural resources in a sustainable manner; 3) understanding and preserving biodiversity; and 4) developing analytical tools that integrate social, economic and natural sciences to support policy formulation. NOAA's programs are embodied in this priority area of concern.

BENEFITS OF PARTNERSHIP

NOAA builds partnerships with universities; international, federal, state and local entities; industries and businesses; and groups and individuals to address common needs and leverage resources. For example, the Fishery Management Councils and the Interstate Marine Fishery Commissions are examples of innovative partnerships bringing resource managers and fishing interests to the same table to address concerns. International leadership and collaboration helps to ensure the conservation of living marine resources, especially straddling fish stocks and endangered marine species. NOAA continues to work with local communities to formulate and oversee policies and programs to address fishery resource disasters in the Pacific Northwest, the Northeast, and the Gulf of Mexico. Lastly, NOAA provides technical assistance and financial support for the development and implementation of state coastal zone management plans through

a unique state-federal partnership with coastal states.

NOAA depends strongly on universities to help accomplish science objectives in its mission areas. NOAA and university scientists collaborate on severe weather, climate, and fisheries research via a network of Joint and Cooperative Institutes at universities. NOAA also funds academic researchers through competitive, peer-reviewed programs, including the Climate and Global Change Program, Coastal Ocean Program, the National Estuarine Research Reserve System, the National Sea Grant College Program, the National Undersea Research Program, and the Saltonstall-Kennedy grants program. NOAA has established a NOAA-University Partnership to enhance collaboration with universities, and will host a series of workshops during 1997 with a broad range of both academic and other constituents to provide for constituent input and feedback into NOAA's strategic planning and budget formulation process.

Weather and climate services are provided to the public and industry through a unique partnership between the NWS and the private meteorological sector. The NWS provides forecasts and warnings for public safety, and the private sector promotes dissemination of forecasts and the tailoring of basic information for business uses. NOAA is seeking to reduce the costs of environmental data collection and to improve access to space-based and other environmental monitoring technologies by utilizing existing federal and international assets, and planning for the next generation of polar-orbiting satellites.

CHIEF FINANCIAL OFFICER/CHIEF ADMINISTRATIVE OFFICER

Creation of CFO/CAO

The Chief Financial Officer's Act of 1990, Government Performance and Results Act of 1993, Government Management Reform Act of 1994, and the Financial Management Improvement Act of 1996 share the common goal of bringing the focus, discipline and benefits of private sector

financial management to the Federal Government. Towards this end, the Chief Financial Officer/Chief Administrative Officer position was created in NOAA to lead the cultural and organizational changes needed to realize this Congressional vision of Federal financial management.

Commerce Administrative Management System (CAMS)

Under the Chief Financial Officer's Act, the Commerce Department began to overhaul its financial management systems, developing a program to link all bureaus around a common accounting system. The CAMS will replace existing financial and administrative systems, provide the Department with an integrated, user-friendly, flexible financial and administrative system to support program managers, improve productivity and reduce costs. In August 1996, the Department took delivery of the central part of the system—a new off-the-shelf Core Financial System (CFS). NOAA implemented the General Ledger of the CFS for year-end closing and the production of certain regulatory reports. This module was used recently to close out FY 1995 and will shortly be used to close out FY 1996 and current months in FY 1997.

In Phase 2, NOAA will implement the CAMS DOC Express/small purchasing, CFS Accounts Payable and supporting modules in Office of Finance and Administration Offices in the Washington, D.C. metropolitan area. This deployment is scheduled for July 1997. Under this phased approach, NOAA will complete its conversion to CAMS by the end of FY 1999. Initial roll-out of the entire Core Financial System within the Office of Finance and Administration in the Washington metropolitan area is scheduled for this summer.

Audits

NOAA is undergoing an audit of our financial statements. Obtaining a successful audit increases accountability to NOAA's shareholders, enables sound financial management, and improves the

quality of financial data used to demonstrate the Return-On-Investment of NOAA's programs. The newly-created Audit Resolution Council, chaired by our CFO, is comprised of the Line Office Assistant Administrators. This Council provides the management structure to ensure continuation of the significant progress in developing and implementing the Corrective Action Strategies. The audit report stated that many of the findings resulted from continued use of "antiquated" automated financial systems.

INSPECTOR GENERAL AND GAO RECOMMENDATIONS

The NOAA CFO/CAO is developing a strategic plan for the provision of NOAA's financial and administrative support services in the coming millennium. The successes of NOAA's technical mission are enabled by a CONUS-wide team of experts characterized by flexibility, mission orientation and dedicated to customer satisfaction. The next-generation financial and administrative support services will be realized through organizational synergy and effective knowledge management leveraged upon information technology.

We are fully committed to making our Government more efficient. We consider the Inspector General audit recommendations and GAO reports to be an important management tool and are committed to using the audit process to strengthen our programs. Over the past few years, we have worked closely with the OIG/GAO on all of our major procurements including the NWS Modernization and the GOES and Polar Satellites. We feel it is in the best interest of NOAA and the Government to resolve any issues as quickly and efficiently as possible.

It is largely due to the recommendation of the Commerce and Transportation Inspectors General that the President's FY 1998 Budget reflects the first stage of a two-phase transfer of the aeronautical charting program from NOAA to the Department of Transportation.

As a result of a recent change in NASA policy concerning the forward funding required for its satellite programs, NOAA has proposed to reduce its forward funding to NASA to 2 months rather than the 3 months historically used. We have worked closely with the GAO on this issue.

The current Polar satellites have been lasting longer than expected: their design life is only 24 months; we had previously budgeted them at 36 months; and they are currently budgeted at 51 months. Funding is provided to NASA based upon budget estimates developed yearly by NASA. This has led to excess funds residing on NASA contracts. While none of these funds were ever utilized on line items other than where it was appropriated, they were shifted within program elements inappropriately. NOAA, as a result of discussions with the Department of Commerce and the Inspector General, has recently revised its policy concerning these funds. Our FY 1998 request has been reduced significantly to reflect the use of carryover funds residing at NASA; we are requiring NASA to provide semi-annual updates of the requirements; and the Department's CFO will conduct periodic reviews of current obligation plans.

In a recent report, GAO has contended that NOAA is unprepared to develop the next generation GOES system. In order to begin a GOES next-generation program, two prerequisite efforts must be completed within NOAA. First, requirements for future geostationary observations must be validated jointly by NWS and NESDIS. This process is underway and will continue into 1998, incorporating results from our ongoing GOES I-M Assessment Plan activities and weather forecast model impact studies. Second, NOAA must assess whether available and emerging technologies offer applicable and economical means to meet NOAA's requirements. We have begun concept studies with NASA at federally funded research and development centers. We plan to have the results by the end of 1998 which will lay out our requirements and our 'roadmap' for achieving those requirements.

OTHER INITIATIVES

Information Technology Board

Consistent with ITMRA, NOAA has established the Information Technology Board, a key management structure to ensure NOAA identifies and satisfies present and future technical and resource requirements. The IT Board is in the process of prioritizing and selecting issues.

Among them are:

- Year 2000 Compliance
- System Architecture
- Connectivity
- CAMS Implementation
- Information Technology Security

It is expected that this board will facilitate NOAA's return on investment for its IT acquisition and for ensuring integration of system architecture.

SES Development

Leadership development is vital to continued management excellence. NOAA has created an Executive Resources Board. Accomplishments of this Board include the development of a Standard SES performance plan which incorporates elements addressing professional development and the implementation of an SES Development Program. Future development efforts are envisioned to include new century thinking seminar series; improved orientation for new SESers; a voluntary mobility program for senior executives; and feedback programs for developmental purposes based upon feedback from subordinates, peers and superiors.

I again thank you for this opportunity to share with you a few of our successes and examples of our accomplishments. We are fully prepared to meet the President's challenge to work better and cost less. I believe we have made great strides and know that continued effort is the only way to ensure that the successes we have attained are the beginning, not an end. We look forward to the continuing challenges and opportunities and hope to work closely with you.

Mr. Chairman, this completes my remarks. I will be pleased to answer any questions you may have.

NOAA'S HYDROGRAPHIC CHARTING PROGRAM
View From a Contractor's Perspective

Robert W. Morton, Ph.D., Vice President
Marine Systems and Surveys Operation
Science Applications International Corporation

As stated in the invitation I received to testify before this committee, it is clear that modern navigation technology can provide significant benefits to the safety and efficiency of maritime commerce; but only if comprehensive hydrographic data are available that meet the requirements of these new systems. Fortunately, many of the same technological advancements that have improved vessel navigation also have direct application to the methods by which hydrographic data are acquired. Through the development of shallow water multibeam sonars, improved side scan sonars and GPS positioning, hydrographic surveying can now be accomplished with the 100% bottom coverage that is critical for the production of electronic charts and precise navigation of commercial vessels. However, it should be pointed out that this technology is still very new, and improvements to the instrumentation and procedures are continually being made. These improvements have, and will continue, to increase the efficiency and accuracy of survey operations, however, they generate much more data than was ever available in the past and unless they are used in an appropriate manner there is a definite potential for error or omission.

I represent the Newport, RI office of Science Applications International Corporation (SAIC), an organization that has spent the last several years developing systems and conducting surveys that meet the strict requirements for hydrographic surveying. NOAA is one of many clients we support, however, they are unique, in that they play a large role in setting the standards to which our systems and procedures must adhere. SAIC was fortunate to be awarded the first contract that NOAA issued to the private sector for Hydrographic Surveying using multibeam and side scan sonars. This survey took place in Long Island and Vineyard Sounds during 1995 and we are now preparing for a second contract to conduct a similar survey in the Gulf of Mexico.

I believe that the contracting relationship between NOAA and SAIC was successful during execution of the first project, although it has been a very complex and difficult effort. As I stated above, the new instrumentation used for hydrographic surveying, generates large amounts of data, and it is my opinion that neither SAIC nor NOAA were prepared for the complexities that this caused on such a large survey effort. Throughout the duration of the first contract, NOAA was extremely rigid relative to quality control issues, thereby insuring valid data; however, they were flexible in allowing SAIC to modify our survey schedules and plans in order to deal with the problems encountered. I can honestly state that NOAA, working within the boundaries of federal contracting regulations, certainly did their part to make the first contract survey a success.

I can also state that lessons learned in the first survey were incorporated in the RFP for the Gulf of Mexico contracts which are now under negotiation. These contracts include more concise language concerning accuracy and coverage requirements as well as utilization of computer generated quality control, rather than traditional paper products. Furthermore, the use of the Brooks Act contracting approach, rather than the original competitive, fixed price contract, changes the emphasis in NOAA's selection process to

one of technical capability rather than cost. All of these changes should make the follow on contracts more efficient and profitable, both for NOAA and the contractors.

I believe that this is a key point. If NOAA is to be successful in contracting hydrographic surveys over the long term, it must find a way to maintain the quality of the data while making the venture a profitable one for contractors. This leads directly to the issue of liability insurance to protect the government from the legal consequences of possible survey errors. This insurance is currently included as a requirement in the RFP for the Gulf of Mexico survey contracts, however, our investigations have found that this is simply not a cost effective option. First, it is not clear that the insurance would be available for the extended time required, and second, the costs for a single survey sheet, exceed the overall funding available for the entire project.

Furthermore, it is not the survey contractor who actually puts the depth sounding on the chart; that is now, and should continue to be, NOAA's responsibility. In order to meet that responsibility NOAA must have the capacity to review and edit the data generated by survey contractors. The fact is, that if done correctly, the quality control procedures required by NOAA and the International Hydrographic Organization (IHO) do provide the traceability back to raw data that would allow NOAA to make appropriate charting decisions. However, these are complicated requirements that must take into account the performance specifications of modern instrumentation. I believe that NOAA is now capable of accepting that responsibility and should remain in that role by continuing to develop and enforce the appropriate quality control criteria to determine the validity of survey data. This means that NOAA must maintain a thorough understanding of the technology and procedures utilized by the survey contractors; a very difficult task during this period of rapid technology growth.

I am aware of the restrictions that have been placed on NOAA with regard to improvement of data acquisition technology within the organization, and although I agree with the emphasis placed on contracting with the private sector, I am concerned that NOAA will not be able to maintain its expertise over the long term without an ability to utilize such equipment in house. If NOAA does not have sufficient qualified hydrographers, experienced in multibeam sonar operations, they will soon be unable to realistically judge the quality and efficiency of contracted surveys or to participate in decisions made by the International Hydrographic Organization regarding the criteria for accuracy and reliability of hydrographic data. I believe that an appropriate level of technology improvement should be preserved within the NOAA appropriations to insure that the agency is able to maintain its role of setting standards for hydrographic survey operations in a manner that will allow NOAA to accept the liability associated with production of nautical charts. I would even go one step further, and suggest that NOAA should be given responsibility for initiating and developing new technology and procedures to improve the efficiency and accuracy of hydrographic surveys.

This is important to SAIC, not only because of our work with NOAA to meet the survey needs of the coastal United States, but also because we, and other contractors, compete on an international level for hydrographic systems and surveys. Many of our international competitors are supported by government subsidies that are not available to U.S. companies. The major discriminator we do have, is that our systems and procedures have been verified by NOAA to meet IHO standards. NOAA's credibility in terms of quality control of hydrographic data and continued participation in the International Hydrographic Organization are key to maintaining the competitive stature of American companies in the international marketplace.

In summary, we at SAIC look forward to participating in the very important task of surveying the critical areas of the U.S. coastline and continuing to work with NOAA to insure that the data acquired are compatible with the requirements of modern navigation systems. In order to accomplish this objective, we feel it is critical that NOAA maintain the expertise that will allow the agency to continue to set the standards, provide the quality assurance and accept the liability that is inherent with the production of nautical charts.



Management Association
for Private
Photogrammetric Surveyors

**Testimony of Bryan J. Logan
Photo Science, Inc.
on behalf of the
Management Association for Private Photogrammetric Surveyors
before the
Subcommittee on Oversight of Government Management,
Restructuring and the District of Columbia
Senate Committee on Governmental Affairs**

**Opportunities for Management Reforms at NOAA
April 24, 1997**

Mr. Chairman, members of the Subcommittee, I am Bryan Logan, Chief Executive Officer of Photo Science, Incorporated, a professional mapping services firm headquartered in Gaithersburg, Maryland with affiliated offices in Greensboro, NC, San Francisco, CA, and Albuquerque, NM. Our firm has a total of 180 employees. I am testifying today on behalf of the Management Association for Private Photogrammetric Surveyors (MAPPS), a national association of more than 100 mapping and spatial data service firms, of which I am the immediate past president. With me is Mr. John Palatiello, the Executive Director of MAPPS.

I would like to spend a few moments highlighting 3 major issues relating to the pervasive extent of government competition with, and duplication of, the private sector in surveying, mapping and related services, particularly in NOAA:

1. The private sector must not only compete with Federal agencies for work, but we must compete for the scarce technical and professional personnel in our field;
2. Many of the activities currently performed by NOAA can be conducted more efficiently by the private sector; and

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3. There is a legitimate role for the government to play in mapping and spatial data. However, that role does **NOT** include data collection and production. Commercial activities should be left to the private sector. Federal agencies, particularly NOAA, should be reinvented and redefined into such roles as setting standards, conducting basic research in conjunction with the private sector (with prompt commercialization of the technologies and methodologies that result from such joint research), coordinating needs and user requirements, and managing contracts.

FEDERAL EMPLOYEES

In recent years, Photo Science has been fortunate to grow and expand at a greater rate than at any time in our 42 year history. This growth is not only attributable to new market opportunities in Federal agencies, but by our ability to recruit highly qualified personnel from Federal agencies. As the Federal Government downsizes, we have created new private sector jobs for individuals from the U.S. Geological Survey, Army Corps of Engineers, NOAA, Tennessee Valley Authority, Defense Mapping Agency and now NIMA. We have prided ourselves in our ability to assure a softlanding for former Federal employees.

Photo Science is not alone in that effort. Many of the MAPPS member firms are also experiencing record growth and many are joining me in the recruitment and retention of former federal employees. So, with downsizing government happening, I strongly believe contracting could and should happen faster.

NOAA COMPETITION & DUPLICATION

There is an opportunity to realize significant savings in the programs of the National Oceanic and Atmospheric Administration (NOAA) by **increasing** its National Ocean Service's utilization of private sector firms for its mapping, charting and geodesy (MC&G) programs. NOAA can make more effective use of the private sector in geodetic surveying, aerial photography, nautical charting (hydrographic surveying), and photogrammetric mapping.

The Federal Government has long held that surveying and mapping are commercial, not inherently governmental, services. Since 1955, it has been the policy of the U.S. Government not to compete with the private sector. The policy states the Federal Government "will not start or carry on any commercial activity to provide a service or product for its own use if such product or service can be procured from private enterprise through ordinary business channels". (SEE Office of Management and Budget Circular A-76)

In its FY 1990 budget proposal to Congress, the Administration recommended increased use of private surveying and mapping firms by all Federal agencies when it reported "use of the private sector is an important management tool to raise productivity, cut costs and improve the quality of Government services, the advantage of which is, efficiency, quality and innovation in the delivery of goods and services ... specific areas where the Government could place greater reliance on private sector providers include ... map-making activities."

The Heritage Foundation, in a report "Cutting the Deficit and Improving Services by Contracting Out", published in March, 1995, said "thirty-nine federal departments, agencies and bureaus, including the U.S. Geological Survey, National Oceanic and Atmospheric Administration, Army Corps of Engineers, Defense Mapping Agency and National Mapping Division of the Department of the Interior, employ 7,000 workers and spend approximately \$1 billion in surveying and mapmaking. Mapmaking is a service that is readily available from private industry at competitive costs. All government mapmaking activities should be opened to bids from private-sector suppliers."

Numerous previous studies, including those in which NOAA has participated, those which NOAA requested, and those which NOAA conducted, have concluded that contracting for surveying and mapping work is desirable and feasible.

In 1973, NOAA participated in a Task Force on Mapping, Charting, Geodesy and Surveying convened by the Office of Management and Budget. That task force concluded "private cartographic contract capability is not being used sufficiently. We found this capacity to be broad and varied and capable of rendering skilled support... Contract capability is a viable management alternative ... Its use should be encouraged in lieu of continued in-house build-up."

In 1985, NOAA asked the National Academy of Sciences to study the Office of Charting and Geodetic Services. It found "commercial resources offer time-proven expertise and professionalism in a wide range of cartographic activities."

In 1994, the Academy's Marine Board issued a report, Charting a Course Into the Digital Era, Guidance for NOAA's Nautical Charting Mission". It said "One proven means for NOAA to increase the collection of data is to use private contractors for data acquisition."

In 1996 the National Academy of Public Administration ("A Performance Based organization for Nautical Charting and Geodesy") found "participation by the private sector might be substantially increased through contracts", but opposed the outright privatization of basic NOAA charting and geodesy functions.

Finally, also last year, the Commerce Department Inspector General concluded in "NOAA Should Decommission its Ships and Terminate the recent Billion-Dollar Fleet Modernization Plan" that "NOAA's mapping and charting requirements can be met by contracting with private-sector firms to provide the data."

AERIAL PHOTOGRAPHY

NOAA operates and maintains aircraft (planes, aerial cameras and crews) at a cost that is significantly greater than the private sector. The aircraft are of makes and models far in excess of what is needed for aerial photography and what is used more effectively by the private sector, the aerial cameras duplicate those used and available from the private sector, and the number of

flight crew members for aerial photo missions are in excess of the norm in the private sector. According to an Inspector General's report, made at the request of Congressman Myers of Indiana, NOAA cannot adequately account for the cost of its aerial photo operations. The IG also reports that during the midwest floods in 1993, NOAA flew aerial photography for other agencies without any coordination with other agencies to avoid costly duplication. Moreover, since Office of Management and Budget Circular A-76 requires an agency to cost compare a commercial activity function with the private sector before providing such a service to another Federal agency, and NOAA has not conducted such a study on its aerial photography, it is in violation of the Circular.

In March of last year, members of our association took a tour of NOAA's National Ocean Service facilities in Rockville, MD. We were shown a typical aerial photography project in the planning stage. The project happened to be in Prince William Sound, Alaska. We were told NOAA would mobilize an aircraft and crew from Tampa, FL, all the way to Alaska to conduct aerial photography missions. Due to the weather and tide constraints, I expect it will take them several weeks to complete the job during which they will be incurring expenses. Why not contract with a private firm that is located within 100 miles of the project, has all the equipment and personnel necessary, and has a proven track record of successfully completing many tide-coordinated projects in Alaska? The same case can be made for every one of NOAA's planned coastal aerial photography projects around the country in the next five years. There are private firms closer to virtually every project than NOAA's aircraft in Tampa. I believe it is wasteful and unnecessary for NOAA/NOS to mobilize an expensive aircraft and crew from Florida for this small project in Alaska. In fact my firm has been contacted for the first time to do such work in Miami, FL for NOAA. The work has not been totally completed to-date due to adverse weather. However, the comments we have received relating to the work we have completed has been extremely positive from all NOAA technical personnel.

GEODESY

NOAA is engaged in unfair competition with private firms, particularly small business, in the field of geodetic survey by performing for States, often 100% reimbursable by the State, services otherwise available from private firms. These sole source, non-competitive agreements between the States and NOAA violate Federal policy and should be revised to provide business opportunities for the private sector. Through a program known as "Supernet", to provide a "super network" of Global Positioning System (GPS) survey control points in various states, NOAA personnel and equipment is dispatched from Washington, DC to various States to perform this work. These projects are funded through cooperative agreements between NOAA and individual states which constitute unfair government competition with private business. I personally was victimized by NOAA's unfair competition when my firm assisted the State of Vermont in the development of a state-wide network, only to have NOAA take the project away from me.

Federal law and an OMB policy and procedure circular protects the private sector from unfair government competition. NOAA is in violation. The Intergovernmental Relations Act (31 USC 6505) which requires services provided to State and local government be consistent with and further the policy of the United States Government of relying on the private enterprise system to

provide services reasonably and quickly available through ordinary business channels.

That provision of law is implemented by OMB Circular A-97. It established conditions under which Federal agencies can provide specialized or technical services to State and local government. The circular requires:

Such services will not be provided unless the agency providing the services is providing similar services for its own use under the policies set forth in ... Circular No. A-76 ... In addition, in accordance with the policies set forth in Circular No. A-76, the requesting entity must certify that such services cannot be procured reasonably and expeditiously by it through ordinary business channels.

As evidenced by the fact that NOAA has, on some occasions, permitted States to use contractors, it is clear that such services can be reasonably procured from the private sector. While NOAA claims it is not in a position to dictate to States how surveys will be performed, indeed under this OMB Circular they must advise the State that the Federal agency can only provide the service if it is not available from the private sector. We know of no instance wherein a certification has been made that GPS surveys must be performed by NOAA due to lack of availability from the private sector.

In 1979, NOAA's National Geodetic Survey conducted a technical competition between its survey crews and Vernon F. Meyer & Associates, Inc., a private firm in Sulphur, LA. The comparison in East Texas for leveling services found the private firm more accurate and more productive than the NOAA crew.

Nevertheless, the agency only recently began to contract with private firms for a limited amount of geodetic work at airports for the FAA. This work, primarily funded through the U.S. Army Corps of Engineers, has been accomplished by Woolpert, LLC, Dayton, OH, Rosser-Lowe, Atlanta, GA, and John E. Chance, Lafayette, LA.

HYDROGRAPHIC SURVEYING

In 1994, NOAA awarded a contract to SAIC, Newport, RI, for nautical charting (also known as hydrographic surveying) services in an area generally in the vicinity of Eastern Long Island, NY; Nantucket and Martha's Vineyard Sound, MA; and Long Island Sound (CT and RI). This marked only the second time in the more than 200 year history of NOAA or the former Coast and Geodetic Survey that it has used private contractors for its hydrographic surveying needs. Some small project work has recently been accomplished for NOAA through the U.S. Army Corps of Engineers by ARC Surveying and Mapping, Jacksonville, FL, and by C&C Technologies, Inc. and John E. Chance & Associates, Inc., both of Lafayette, LA. Last year, a contract was advertised for the Gulf of Mexico, but it has not yet been awarded.

The Gulf of Mexico contract demonstrates the obstacles NOAA has erected to contracting. This contract requires (1) that firms obtain \$100 million liability coverage for 15 years, (2) that a NOAA officer be on board the contractor's vessel for quality control reasons. Furthermore, with

regard to the liability requirement, these are simply a "deal killer". No such insurance is available in the commercial market. Even Lloyd's of London will not write offshore errors and omissions insurance for that limit and duration. One of our members was quoted a \$200,000 premium for \$5 million of coverage for 1 year. The contract is estimated at \$2.6 million over 2 years. In other words, NOAA is asking for \$4 million insurance premium on a \$2.6 million contract.

Furthermore, NOAA is still insisting on awarding a contract for 18 multibeam survey systems it says it needs to monitor contractor work. We believe that NOAA should have access to some of this new equipment to carry out research and checking, however, 18 systems for this purpose is excessive and in competition with private sector firms who have already invested in such systems. If NOAA really believes 18 systems are necessary for monitoring purposes, they could obtain access to these systems through private sector firms who already have such systems in service.

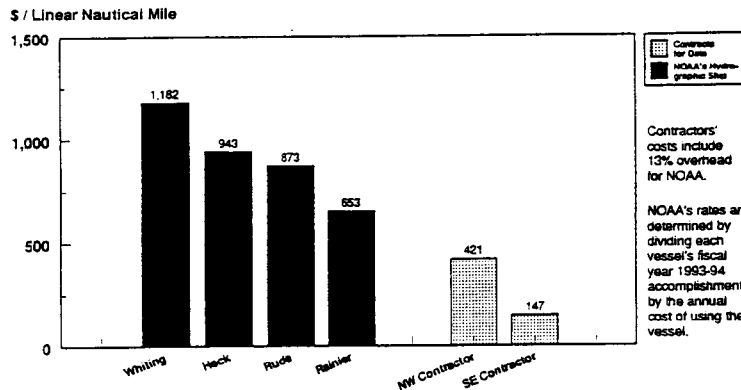
These contracts are in response to the Clinton Administration's National Performance Review. The "Reinventing Government" report suggested:

The National Oceanic and Atmospheric Administration (NOAA) will experiment with a program of public-private competition to help fulfill its mission ... The experience of the U.S. Army Corps of Engineers, which contracts out 30 to 40 percent of its ocean floor charting to private firms, shows that the private sector can and will do this kind of work.

The capacity and capabilities of the private sector are significantly greater than NOAA is utilizing, as evidenced by the Corps of Engineers' use of private firms. Use of private contractors by NOAA should be required by the Committee in lieu of a NOAA hydrographic ship modernization expense.

Does contracting save the taxpayers money? The answer again is yes. As the chart reprinted below indicates, private sector surveying and mapping ships are significantly more cost effective than NOAA's ships. Despite an increase in contracting, NOAA is still spending taxpayer money to upgrade its own ships with new equipment.

**Comparing NOAA's Cost for Mapping a Linear
Nautical Mile with Contractors' Rates**



Source: NOAA Should Decommission Its Ships and Terminate the Recent Billion-Dollar Fleet Modernization Plan, Department of Commerce, Office of Inspector General, March, 1996.

PHOTOGRAMMETRY

Photogrammetry, the engineering process of taking precise measurements from aerial photographs to produce topographic, planimetric and other forms of maps, is a commercial activity provided by some 250 firms in the United States. Other agencies, such as the Corps of Engineers, Geological Survey, Forest Service and Federal Highway Administration have contracting programs to obtain such services from the private sector. Until recently, NOAA has not contracted for this service. Precision Photo Laboratories, Inc., Dayton, OH, has a NOAA contract for processing aerial photography. My firm has been awarded one of NOAA's first photogrammetry contracts. This contract involves abstracting coast line mapping from the aerial photography of the Miami area previously mentioned. This small project is welcome and I hope will convince NOAA that this should be the standard approach for obtaining this type of mapping. NOAA needs to set up an aggressive contracting program for this service.

AERONAUTICAL CHARTING

There are significant portions of NOAA's aeronautical charting program that can be performed by the private sector. Many of the photogrammetric and cartographic functions, data compilation, and related activities are well within the area of expertise of MAPPS member firms and other professionals. As evidence, I would point to the digital State Aeronautical Chart produced by Bohannon-Huston, Inc., in Albuquerque, NM for the New Mexico State Department of Transportation, Division of Aviation. On this project, Bohannon-Huston was selected on the basis of its professional qualifications, a mutually agreeable fee that was fair and reasonable to the State was negotiated, and the State provided an indemnification for the firm.

QUALIFICATIONS BASED SELECTION

Congress has assured NOAA and other Federal agencies that it need not sacrifice quality when its contracts with the private sector for surveying and mapping services. Under Federal procurement law, contracts for surveying and mapping services are awarded on the basis of demonstrated competence and qualifications, not to the low bidder. (SEE 40 U.S.C. 541 et. seq., 48 CFR 36.102 & 601-4(a)(4)). While this should eliminate any doubt in NOAA's mind about its ability to select a qualified contractor for these services, the Commerce Department has refused to permit NOAA to use this procurement process for its surveying and mapping contracts. As a result, Congress adopted an amendment to NOAA's appropriation which reads as follows:

The Secretary of Commerce may award contracts for hydrographic surveying and mapping services in accordance with Title IX of the Federal Property and Administrative Services Act of 1949 (40 U.S.C. 541 et. seq.)

We are told Commerce counsel still is not satisfied with this authority and Congress must address this issue once again this year.

NOAA ROLE

There is a capable and qualified private sector in the area of surveying and mapping that can and should be used to a greater extent by NOAA. There is no justification, from a policy or fiscal point of view, for NOAA to maintain government activities that duplicate or compete with the private sector. Activities that are commercial in nature, such as geodetic surveying, aerial photography, nautical charting (hydrographic surveying), and photogrammetric mapping should be performed by the private sector, using the qualifications based selection process provide in Federal law.

NOAA has taken some initial steps toward contracting, but they have not yet begun to scratch the surface in terms of the percentage of their work they still perform in-house versus by contract. They have learned to "talk the talk", but they are painfully slow to "walk the walk".

NOAA has also accomplished valuable work in the establishment of professional and technical standards, research and development, and the funding and administration of grants. Moreover, NOAA has responsibility for a national charting program and an obligation to perform services that are inherently governmental in nature, which are not competitive with the private sector, and which will not interfere with their Federal responsibilities. It is not, however, a proper role of government to perform activities that are commercially available. This is a responsibility of the private sector.

NOAA's in-house activities should be focused on the establishment of professional and technical standards, research and development, and the funding and administration of grants, and to perform those services that are inherently governmental in nature and which are not competitive with the private sector.

I know this role can work because my firm has benefited from joint research with and small production contracts for NOAA. There could and should be more such activity with NOAA and

the private sector. I believe that if NOAA and the other federal agencies were to fully utilize the private sector surveying and mapping resource firms, organizations such as mine could triple in size, with a corresponding increase in tax revenues for the Federal government.

CONCLUSION

With regard to the future of NOAA, as I mentioned, some of their activities are of critical importance to the commerce of the United States. However, should Congress pass legislation affecting the Department of Commerce, we would urge that the governmental responsibilities I mentioned earlier be retained. We believe it makes sense for the aeronautical charting program to be moved to the Federal Aviation Administration. There are, nevertheless, significant activities that FAA should contract to the private sector. It is our view that the geodesy and nautical charting programs of NOAA should be transferred to the U.S. Army Corps of Engineers.

Our great free enterprise system is based on the laws of supply and demand. The Federal Government should not be the supply for mapping, it should be the demand for mapping when there is a public interest to be served.

To remedy this situation, we would recommend that Congress take these steps:

- Enact S. 314, the Freedom from Government Competition Act, introduced by Senator Thomas of Wyoming, and of which you are an original cosponsor, Mr. Chairman. This bill would establish a process by which the Office of Management and Budget will identify government activities that are commercial in nature and implement a plan to contract those activities to the private sector;

- With specific regard to surveying and mapping --

- evaluate all NOAA programs in order to determine mapping that can be commercially provided. Spending on these programs should be eliminated in order to empower market forces to provide this mapping; and

- redirect NOAA to those aspects of mapping to those functions and responsibilities that are more appropriate for the government, such as standards setting public/private research partnerships, coordination of user agency requirements and dissemination of government data to user agencies.

Thank you for the opportunity to share our views and I would be happy to answer your questions.

THE UNOLS RESEARCH FLEET AND NOAA: A GROWING PARTNERSHIP

**Testimony of Professor Kenneth S. Johnson
(Moss Landing Marine Laboratories, California State University)
Chair, University-National Oceanographic Laboratory System**

Mr. Chairman and Members of the Subcommittee:

I appreciate the opportunity to testify on behalf of the University-National Oceanographic Laboratory System (UNOLS). My testimony regards interactions of UNOLS with the National Oceanic and Atmospheric Administration (NOAA). I do this in my capacity as Chair of UNOLS, an organization of 57 academic institutions and National Laboratories from 27 states that are involved in oceanographic research (Table 1). I will begin by summarizing the structure of UNOLS, the status of the UNOLS Fleet and our current operations before I discuss NOAA/UNOLS interactions.

UNOLS institutions conduct ocean science research and education programs and they may operate oceanographic research vessels. They are joined for the purpose of coordinating oceanographic ship schedules and research facilities to maximize their efficient use. This coordination is governed by one simple reality - every extra dollar used to support ships is one less dollar for science. UNOLS ensures cost-effective access to the ocean for all of the nation's scientists.

UNOLS is now in its 25th year as the world leader in oceanographic facilities. The 27 research vessels in the UNOLS Fleet (Table 2) stand as the largest and most capable fleet of oceanographic research vessels in the world. It is a substantial national asset. There are five large (>200') Navy owned, University operated ships in the Fleet. The newly constructed RV ATLANTIS, also Navy owned, will join the Fleet in June, 1997. Eight UNOLS vessels are owned by the National Science Foundation (1 large, 3 intermediate, and 4 small). The remaining 14 ships are owned by State and private institutions (4 intermediate and 10 small). In addition, UNOLS coordinates the operations of the National Deep Submergence Facility, including the submersible ALVIN. We have recently begun working with the United States Coast Guard to provide scientific guidance to Arctic icebreaker operations.

The UNOLS Fleet is utilized by scientists from all of the states and many institutions beyond those that are UNOLS members. These sea-going facilities provide the platforms on which the bulk of American oceanographic research is performed. Research performed on UNOLS ships contributes to our understanding of interannual changes in climate that are driven by El Nino, formation of tropical storms, and fisheries management. The Fleet supports studies of global ocean circulation, fundamental studies of ocean acoustics and light scattering that contribute to the Navy's mission of national defense, and the pure research needed to understand ocean processes.

Status of the UNOLS Fleet

The UNOLS Fleet is generally in its best condition ever. We are nearing the completion of a decade that will see nearly \$200 million in capital improvements to the Fleet that have been funded by the U.S. Navy and by the NSF. We are very grateful for the support of Congress and these Federal agencies. This support will ensure that American scientists can collect the data needed to manage the ocean wisely. State and private institutions have also funded substantial improvements to the Fleet, including vessel acquisition and modernization. This illustrates one of the strengths of UNOLS: it is a very broad based partnership that allows all of the participants to greatly leverage their assets.

As a result of this support, all of the large Class I ships (>250') are new or they have undergone major midlife refits. Most of the intermediate ships (Class III, 150' to 200') have undergone major midlife refits during the past 5 years. Significant upgrades to several small, coastal vessels (<150') are just completed, or will soon begin. However, with a projected lifetime of 30 years for an oceanographic vessel and 27 ships in the Fleet, we must continue to plan for modernization and new construction at a rate of nearly one a year. Funds have been appropriated by the U.S. Congress for a new Navy owned ship to replace the aging MOANA WAVE. New ships to serve coastal research in Alaskan waters and mid-Atlantic waters will soon be required to replace the oldest ships in the Fleet.

Operations of the UNOLS Fleet

The Fleet supports research that is funded by a variety of Federal and State agencies (Tables 3 and 4). The National Science Foundation has provided the greatest amount of support (60% of the operating days). The Office of Naval Research (11%) and NOAA (7%) are also substantial supporters of the Fleet. The U.S. Naval Oceanographic Office (NAVO) has begun utilizing the Fleet in 1997 (8%). There are also a variety of other users of the Fleet (14%). These are primarily state governments and other Federal agencies such as the Mineral Management Service, United States Geological Survey and the Environmental Protection Agency.

The UNOLS Fleet is projected to operate for 4,926 days at sea in 1997. The Fleet typically operates throughout the world's oceans (Figure 1). The actual number of sea days in any year will fluctuate depending on the needs of science (Table 3 and 4). For example, the funds supplied to the Fleet by the Office of Naval Research may fluctuate by nearly a factor of two on an annual basis as their research needs change (Table 4). Operational costs for the Fleet have varied between \$42.3 million and \$50.8 million over the past 5 years, depending on the number of days at sea that are required. Each operator of a UNOLS vessel functions on a year to year grant basis and vessels may be held out of service if they are not required.

There are many fixed annual costs in operating a ship, such as maintenance and salary. It is most economical, in terms of the dollar cost per day at sea, to operate at near the maximum number of days. This spreads the fixed costs over the most days. Owing to some declines in Federal budgets and the delivery of new ships, the UNOLS Fleet has excess capacity. This increases the daily rate for ships in the Fleet that do not have full schedules. We have, therefore, sought other Federal and State agencies to utilize this substantial national asset in order to optimize operational costs. These interactions reduce the cost of ship time to all agencies that use the UNOLS Fleet. Our interest has been not in displacing the oceanographic fleets of other agencies, but rather in supplementing them. We are poised to be able to do this easily and cost-effectively.

A significant feature of the 1997 schedule is the addition of 393 operating days for NAVO (Table 3). This work will support the Navy's mission requirements for collection of oceanographic data in U.S. coastal waters. The wide geographic distribution of the UNOLS Fleet (Figure 2) has resulted in a great cost savings for the Navy because NAVO survey ships are forward deployed in foreign waters. Returning NAVO ships to U.S. waters to collect data needed for computer model development or

training exercises would be much more expensive than utilizing the UNOLS vessels already present in the required areas. All reports from the initial cruises in support of NAVO have been very positive and we are looking forward to a very beneficial relationship that can help the Navy and provide valuable training opportunities. The work with NAVO is one example of our effort to find new partners for the UNOLS Fleet.

UNOLS Interactions with NOAA

NOAA is another agency to which UNOLS ships have provided sea-going support. NOAA has three primary missions requiring ships: 1) surveying for coastal charts; 2) fisheries assessment; and 3) research. Our interactions have mainly been with the NOAA Office of Ocean and Atmospheric Research (OAR), which is the primary research office at NOAA. OAR performs research and monitoring that is very compatible with the capabilities of UNOLS ships.

As NOAA has begun to retire the oldest ships in their fleet, the UNOLS Fleet has provided increased support to NOAA, especially OAR. NOAA will use approximately 337 operating days during 1997 in the UNOLS Fleet, at a cost of \$3.5 million (Table 4). This will be their highest level of participation in the past 5 years.

In recognition of the need for NOAA to find access for their scientists to the sea, and the desire of UNOLS to find other Federal agencies to support the UNOLS Fleet, we are developing a Memorandum of Understanding between the NOAA Office of Ocean and Atmospheric Research and UNOLS. Major points of the proposed MOU include the following:

- The new large NOAA Research Vessel RONALD BROWN will enter the UNOLS ship scheduling process. NOAA will provide funding equivalent to that required for annual operation of the BROWN. Some of these operations will be on the BROWN and some on UNOLS vessels. UNOLS scientists will be scheduled on the BROWN when it is not performing NOAA work and when it is cost effective to do so. This will provide NOAA with much greater flexibility in scheduling ship time, as a single ship cannot meet their multi-ocean requirements without conducting excessive transits. Academic scientists will have access to the specialized atmospheric research capabilities of the BROWN, as well as its general purpose capabilities.
- In order to equitably trade days among ships of different sizes, NOAA will account for the operational costs of the RONALD BROWN on a similar basis to that used by NSF and ONR.
- In addition to the equivalent of one year of ship time, to support the BROWN, NOAA OAR will out source approximately \$2.6 million per year in ship requirements (approximately one half of the annual cost of a large ship). OAR will present these requirements first to UNOLS.

UNOLS will provide approximately 20-25% of the ship time required by NOAA OAR (approximately \$3 million/\$12.9 million in FY98 NOAA budget for OAR ship operations) under the proposed MOU. While the BROWN will be scheduled in the UNOLS process, it will remain a NOAA ship. If necessary, most or all of the NOAA OAR research could be conducted on ships of the UNOLS Fleet.

The NOAA Office of Ocean and Atmosphere Research also utilizes the submersible ALVIN for their mid-ocean ridge studies and for the National Undersea Research Program (NURP). This work is conducted under a Memorandum of Agreement between NSF, ONR and NOAA. The NURP program also uses some UNOLS ship time, as required by their science.

The largest requirement for ship time within NOAA is at the National Marine Fisheries Service (NMFS). They budget approximately \$25.1 million (FY98 request) per year for ship time to support their operations. The NMFS work is divided into three major categories; fish stock assessments, marine mammal surveys, and fisheries oceanography. Their work requires two types of ship; fisheries vessels capable of towing large trawl nets for stock assessments and general purpose oceanographic vessels for surveys and fisheries oceanography. The UNOLS Fleet does not now have ships with the capabilities to tow large trawl nets. However, most of the remaining NMFS work (approximately 1/3) can be performed in ships of the type in the UNOLS Fleet. For example, the UNOLS Fleet has provided some support for NMFS fisheries oceanography programs such as GLOBEC and FOCI.

The National Ocean Service (NOS) is responsible for collecting the bathymetric data needed to produce navigational charts. Most of their requirements for time at sea (\$14.5 million, FY98 request) are in support of these charting operations. I believe that the general purpose ships of the UNOLS Fleet are not well prepared to meet the rigorous legal and technical requirements of this work. It is best suited to a dedicated fleet of ships. The NOS does conduct a Coastal Ocean Program that studies biological safety issues such as Hazardous Algal Blooms. The UNOLS Fleet could, if necessary, provide ships for these programs.

While the UNOLS Fleet can supplement the ship requirements for NOAA OAR and NMFS, we do not have enough excess time available in the Fleet at the current time to replace all of their requirements. If the UNOLS Fleet is fully utilized, it can provide about 6000 operating days at the current size of the fleet (including the new ATLANTIS, but not including the RONALD BROWN). Thus, there is an excess capacity of about 1000 days in 1997. This is equal to three to four ship years or 17%. Further, scheduling conflicts prevent even utilization of the Fleet throughout the year. For example, there are many more requests for ship time during summer, than winter, to take advantage of better weather conditions and to study the most active biological systems. It is also necessary to periodically take ships out of service for maintenance periods. These conflicts make the last 10%, or 500 days, of Fleet capacity very difficult to utilize. More time may come available if access to the UNOLS Fleet allows the Naval Oceanographic Office to reduce their backlog of survey requirements.

In summary, the UNOLS Fleet represents a substantial Federal asset that can provide support to many agencies. We welcome the chance to supply this support as it can provide educational opportunities for ocean science students and it reduces ship operation costs to all agencies. As one aspect of this, we are committed to building a strong partnership with NOAA. We have worked closely with NOAA to provide support to their sea going scientists. We expect to interact even more closely in the future as the RONALD BROWN enters the UNOLS ship scheduling process.

Thank you for the opportunity to provide you with this information.

Table 1. UNOLS Directory (with designated representative). Operators in BOLD

ALABAMA MARINE ENVIRONMENTAL SCIENCES CONSORTIUM Dr. George F. Crozier	UNIVERSITY OF MICHIGAN, CENTER FOR GREAT LAKES & AQUATIC SCIENCES Dr. Theodore C. Moore, Jr.
UNIVERSITY OF ALASKA Dr. Thomas Weingartner	MONTEREY BAY AQUARIUM RESEARCH INSTITUTE Dr. Bruce Robison
BERMUDA BIOLOGICAL STATION for RESEARCH, Inc. Dr. Dennis Hansell	MOSS LANDING MARINE LABORATORIES Dr. Kenneth Johnson
BIGELOW LABORATORY FOR OCEAN SCIENCES Dr. David Townsend	NAVAL POSTGRADUATE SCHOOL Dr. Robert Bourke
BROOKHAVEN NATIONAL LABORATORY Dr. Cnrighton D. Winick	UNIVERSITY OF NEW HAMPSHIRE Dr. Wendell Brown
UNIVERSITY OF CALIFORNIA, SAN DIEGO, SCRIPPS INSTITUTION OF OCEANOGRAPHY Dr. Robert Knox	STATE UNIVERSITY OF NEW YORK AT STONY BROOK Dr. Charles A. Nittrouer
UNIVERSITY OF CALIFORNIA, SANTA BARBARA Dr. James P. Kennett	UNIVERSITY OF NORTH CAROLINA AT WILMINGTON Mr. Robert I. Wickland
CAPE FEAR COMMUNITY COLLEGE Mr. Raymond P. Brandt	NOVA UNIVERSITY Dr. Julian P. McCreary
COLUMBIA UNIVERSITY, LAMONT-DOHERTY EARTH OBSERVATORY Dr. Dennis Hayes	OCCIDENTAL COLLEGE Dr. John S. Stephens, Jr.
UNIVERSITY OF CONNECTICUT Capt. Lawrence Burch	OLD DOMINION UNIVERSITY Dr. Larry Atkinson
UNIVERSITY OF DELAWARE Dr. Carolyn A. Thoroughgood	OREGON STATE UNIVERSITY Dr. G. Brent Dalrymple
DUKE UNIVERSITY/UNIVERSITY OF NORTH CAROLINA Dr. Daniel B. Albert	UNIVERSITY OF PUERTO RICO Dr. M.L. Hernandez-Avila
FLORIDA INSTITUTE FOR OCEANOGRAPHY Dr. John C. Ogden	UNIVERSITY OF RHODE ISLAND Dr. Jeffrey E. Callahan
FLORIDA INSTITUTE OF TECHNOLOGY Dr. Richard Gerlick	RUTGERS UNIVERSITY Dr. Clare Reimers
FLORIDA STATE UNIVERSITY Dr. William C. Burnett	SAN DIEGO STATE UNIVERSITY Dr. Clive Dorman
HARBOR BRANCH OCEANOGRAPHIC INSTITUTION Mr. Richard Herman	SEA EDUCATION ASSOCIATION Capt. Philip Sacks
HARVARD UNIVERSITY Dr. Michael B. McElroy	SMITHSONIAN TROPICAL RESEARCH INSTITUTE Mr. Howard Barnes
UNIVERSITY OF HAWAII Dr. Brian Taylor	UNIVERSITY OF SOUTH CAROLINA Dr. Robert Thunell
HOBART & WILLIAM SMITH COLLEGES Dr. Donald L. Woodrow	UNIVERSITY OF SOUTH FLORIDA Dr. Peter R. Betzer
THE JOHNS HOPKINS UNIVERSITY Dr. Stephen L. Root	UNIVERSITY OF SOUTHERN CALIFORNIA Dr. Douglas Hammond
LEHIGH UNIVERSITY Dr. Bobb Caruso	UNIVERSITY OF SOUTHERN MISSISSIPPI Dr. Denis Wiesenburg
LOUISIANA UNIVERSITIES MARINE CONSORTIUM Dr. Michael Degg	UNIVERSITY SYSTEM OF GEORGIA, SKIDAWAY INSTITUTE OF OCEANOGRAPHY Dr. Richard Jabnick
UNIVERSITY OF MAINE Dr. Robert E. Wall	UNIVERSITY OF TEXAS Dr. Terry E. Whitledge
THE MARINE SCIENCE CONSORTIUM Dr. Darlene Richardson	TEXAS A&M UNIVERSITY Dr. Ed Shwar, Jr.
UNIVERSITY OF MARYLAND Dr. Tom Malone	VIRGINIA INSTITUTE OF MARINE SCIENCE Dr. L. Donelson Wright
MASSACHUSETTS INSTITUTE OF TECHNOLOGY Dr. John M. Edmond	UNIVERSITY OF WASHINGTON Dr. Arthur Nowell
UNIVERSITY OF MIAMI, ROSENSTIEL SCHOOL OF MARINE & ATMOSPHERIC SCIENCES Dr. Ottis Brown	UNIVERSITY OF WISCONSIN AT MADISON Dr. Anders W. Andren
	UNIVERSITY OF WISCONSIN AT MILWAUKEE Dr. David E. Edgington
	UNIVERSITY OF WISCONSIN AT SUPERIOR Dr. Mary Balcer
	WOODS HOLE OCEANOGRAPHIC INSTITUTION RADM Richard Pitterenger

Table 2. UNOLS Research Vessels

Operating Institution	Ship	Owner	Length
Class I/II			
Scripps Institution of Oceanography	MELVILLE	Navy	279 ft.
Woods Hole Oceanographic Institution	KNORR	Navy	279 ft.
University of Washington	THOMAS G. THOMPSON	Navy	274 ft.
Scripps Institution of Oceanography	ROGER REVELLE	Navy	274 ft.
Lamont-Doherty Earth Observatory	MAURICE EWING	NSF	239 ft.
University of Hawaii	MOANA WAVE	Navy	210 ft.
To Commence Science Operations in June 1997:			
Woods Hole Oceanographic Institution	ATLANTIS	Navy	274 ft.
Class III			
Harbor Branch Oceanographic Institution	SEWARD JOHNSON	HBOI	204 ft.
Oregon State University	WECOMA	NSF	185 ft.
University of Rhode Island	ENDEAVOR	NSF	184 ft.
Texas A&M University	GYRE	TAMU	182 ft.
Woods Hole Oceanographic Institution	OCEANUS	NSF	177 ft.
Scripps Institution of Oceanography	NEW HORIZON	SIO	170 ft.
Harbor Branch Oceanographic Institution	EDWIN LINK	HBOI	168 ft.
Class IV			
Moss Landing Marine Laboratories	POINT SUR	NSF	135 ft.
Duke University/UNC	CAPE HATTERAS	NSF	135 ft.
University of Alaska	ALPHA HELIX	NSF	133 ft.
Scripps Institution of Oceanography	ROBERT G. SPROUL	SIO	125 ft.
University of Delaware	CAPE HENLOPEN	UD	120 ft.
Bermuda Biological Station for Research	WEATHERBIRD II	BBSR	115 ft.
Harbor Branch Oceanographic Institution	SEA DIVER	HBOI	113 ft.
Louisiana Universities Marine Consortium	PELICAN	LUMCON	105 ft.
University of Texas	LONGHORN	UT	105 ft.
<Class IV			
Smithsonian Tropical Research Institute	URRACA	STRI	96 ft.
University of Michigan	LAURENTIAN	UM	80 ft.
University System of Georgia	BLUE FIN	UG	72 ft.
University of Miami	CALANUS	UM	68 ft.
University of Washington	CLIFFORD A. BARNES	NSF	66 ft.

Table 3.

**UNOLS Fleet: Operating Days (by Agency)
1993-1997**

NSF	2,825	64%	2,870	67%	3,249	67%	2,761	63%	2,944	60%
ONR/NRL	721	16%	486	11%	632	13%	550	12%	545	11%
NOAA	247	6%	251	6%	319	7%	166	4%	337	7%
NAVO	0		0		0		0		393	8%
OTHER***	651	15%	649	15%	666	14%	930	21%	707	14%
	4,444		4,256		4,866		4,407		4,926	

Notes: * Actual

** Projected

*** "OTHER" includes support from agencies other than NSF, ONR and NOAA. It includes state, institution, foreign, and private support.

Table 4.

**UNOLS OPERATIONAL SUPPORT TRENDS
1993-1997 (\$k)**

	1993	1994	1995	1996	1997
NSF	30,558	33,336	36,022	30,785	32,815
ONR/NRL	6,484	3,588	6,455	4,530	4,358
NOAA	1,981	1,956	2,209	1,143	3,509
OTHER*	2,982	2,479	2,280	2,796	7,634
INST/STATE	3,074	2,591	1,563	3,112	2,536
	\$45,079	\$43,950	\$48,529	\$42,366	\$50,852

Notes: Data obtained from NSF Ship Operation Proposals. 1997 figures represent proposal requests. Expect some reduction in actual support in 1997.

* "OTHER" includes support from agencies other than NSF, ONR and NOAA. It includes foreign, private and support from NAVOCEANO.

Figure 1. UNOLS Fleet cruise tracks in 1996.

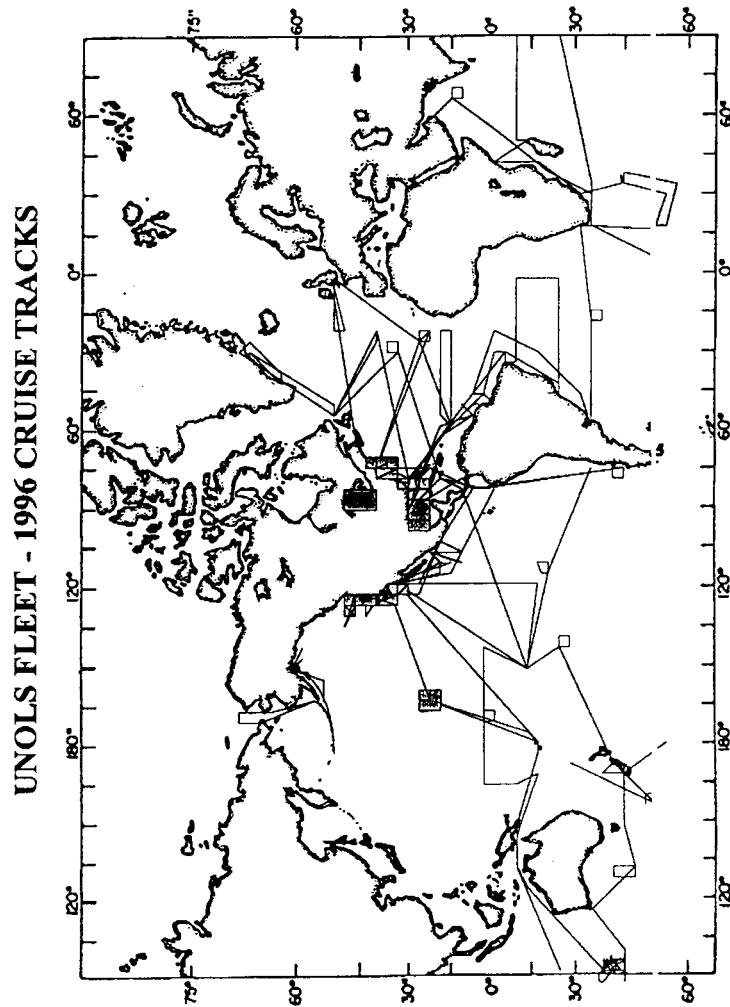
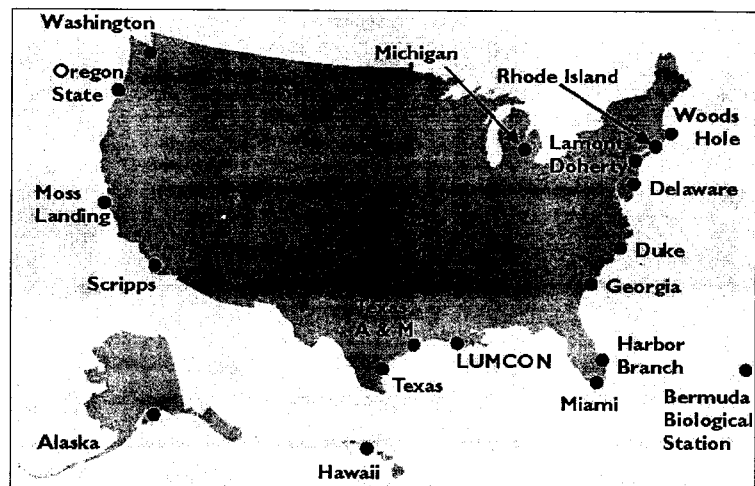


Figure 2. UNOLS home ports.





N. Myers, President
Elliot Abrams, Sr. Vice President

Barry Lee Myers, Exec. Vice President
Evan A. Myers, Sr. Vice President

Michael A. Steinberg, Sr. Vice President
Joseph P. Sobel, Sr. Vice President



Statement by Dr. Joel Myers

on Behalf of

AccuWeather, Inc.

Before the

Senate Subcommittee on Oversight of Government Management

on

Contracting Out and Privatization Opportunities in NOAA

April 24, 1997

Mr. Chairman and distinguished members of the committee, I am Dr. Joel Myers, founder and president of AccuWeather, Incorporated, one of the world's largest commercial weather information and forecasting companies. AccuWeather provides weather information and forecasts in a variety of formats for business, industry, government and the general public. Our weather reports and forecasts can be heard on 500 radio stations across the United States, seen on hundreds of television stations, read in thousands of newspapers and accessed millions of times a day on many of the popular news and weather web sites.

As a former professor at The Pennsylvania State University, I take personal pride in the knowledge that at the time that I left teaching to devote my full attentions to AccuWeather, I had helped train about seventeen percent of all of the meteorologists in the United States.

With that background I can tell you that I am honored to appear before you today regarding issues of "contracting out" and "privatization opportunities" in NOAA.

Mr. Chairman, you and your colleagues may be surprised to learn that on any given day, it has been stated that 85 percent of the weather information making its way to the general public comes from commercial weather companies, such as AccuWeather, and from private sector meteorologists. Much of the specialized weather information and forecasts needed by businesses, government, and industry originates within the private sector.

Absent the current competitive intrusion by the NWS into the weather marketplace, the commercial weather industry could and would produce 100 percent of this country's specialized weather information and routine daily weather forecasts for public availability on radio, television, and newspapers and on the Internet.

The remarkable growth of the commercial weather industry has been achieved in much the same way as other high technology industries have grown and flourished. And, that is through its ability to adapt rapidly to new technologies, to apply those technologies to the demands of business, government, industry and the public, and to do it at a fraction of what it costs government agencies to accomplish the same result.

Commercial weather companies have been able to channel the innovative talents of highly skilled professionals to produce leading-edge, value added products that are the envy of the meteorological world. As a result, AccuWeather and other commercial weather companies have a growing list of clients both in the United States and around the world.

Accurate and timely weather forecasts are demanded by almost every sector of the U.S. economy. Without a vibrant and healthy commercial weather industry the cost of producing all of these products might fall to the government, with a corresponding price tag that would greatly eclipse the current cost of the NWS budget and operations, or just not be produced at all.

In short, a technologically advanced and financially strong weather industry, is vital to the U.S. economy. Equally important, a strong commercial weather industry is key to future down-sizing within the NWS and also to improved severe weather warnings by the NWS.

The NWS of today is a creature of the Organic Act of 1890. That act, passed 107 years ago, at the dawn of the electronic revolution, created the U.S. Weather Bureau within the Department of Agriculture. The Weather Bureau has since become the National Weather Service within the Department of Commerce.

It might have made sense in 1890 to give to the Weather Service a broad charge for taking weather observations, collecting them, redistributing them, and making weather forecasts for

the public and select industries. After all, in 1890, there was not a single commercial weather company. The commercial weather industry began after World War II and has now had a fifty year experience. It has grown to include about 100 companies in the U.S. and many more abroad. And the electronic revolution, including the invention of radio, television, computers and the Internet, was not part of the landscape in 1890.

The U.S. government has spent hundreds of millions of dollars to modernize the NWS, to develop AWIPS and NOAA Port, to put satellites in orbit and to establish the NEXRAD radar network. Little effort has been given to modernizing the NWS's charter, to consider its functions vis-a-vis the commercial weather industry and to take advantage of the opportunities created by the incredible and unimagined changes over the past 107 years.

Some people have asked "Should we privatize the NWS?" "Should we contract out their functions?"

If by "privatize" we are talking about selling off sections of the NWS to the private sector, I think the answer is "No", we don't want to do that. If by "contracting out" we are talking about taking some of its functions and contracting with commercial companies to perform those functions, I would say "No", we don't want to do that.

Neither of these actions is necessary. Why contract out functions that are already being performed in the private sector. Why privatize segments of the NWS that are simply

duplicating private sector efforts. The marketplace has already privatized much of what the NWS does, but the NWS continues activities that are no longer needed because they are carried out and carried out well by the private sector.

What we should be doing, I believe, is moving the NWS out of those areas where it is no longer needed, and reallocating NWS resources to where they are needed: improved severe weather warnings and systems reliability.

A staged and systematic pullback by the NWS is needed from three areas. These are: (1) user specific services, (2) services targeted to specific industries and (3) daily public weather forecasts such as "Partly cloudy today, 30% chance of showers, high in the mid 60's. Sunny tomorrow, high in the low 70's." These are services that government need not provide. They are carried out very well by the private sector.

Yet, a substantial portion of the NWS's budget for personnel and related resources is devoted to these routine and duplicative activities, which directly compete with private sector work. NWS budget cuts should be targeted to these duplicative and competitive areas, not critical areas like the Hurricane Center. And spontaneous new unbudgeted products, such as those recently put out on the Internet with disclaimers of unreliability, should be prohibited. The core responsibilities of the NWS are, and clearly should be (see attached Figure 1 and 2).

- (1) Taking weather observations and gathering data including surface observations, upper air observations, river stage measurements, radar networks and satellite platforms.
- (2) Running the computerized weather models which can predict storms and the future state of the atmosphere, and supporting research in the continued development and improvement of these models.
- (3) The predicting, locating and tracking of severe weather and the issuing of severe weather advisories and warnings to the general public.

There is no question that doing away with other programs and forecasts which people and businesses have become accustomed to will cause expressions of concern by those who are receiving these taxpayer-supported services. But these services are available at very modest cost from private companies. And with a private supplier the customer has many advantages including control over the timing of the services and the tailoring of the services to their own specialized needs. The NWS should not call an individual industry to warn of unexpected weather, a private company will. And, general public forecasts are available free to the public from private companies through media outlets, supported by the outlets themselves and by advertisers.

Taxpayers should not be asked to fund routine daily forecasts of "Partly cloudy today with a 30% chance of showers". Returning the NWS to its core mission will yield significant economies within the federal budget, will contribute to the congressional initiatives to reduce the size of government, will bolster an industry that employs people and pays taxes, and, best

of all, will enhance severe weather warnings for the American public. In fact, if the NWS budget was only modestly trimmed, but their mission redirected, the United States could have a severe weather warning system that would fulfill everyone's desires.

As a step in the right direction I fully support the initiatives to modernize the Organic Act of 1890 by Congress, by the Commercial Weather Services Association and by others.

During the Second Session of the 104th Congress, the U.S. House of Representatives voted in favor of changing the Act. Regrettably, this change, which was incorporated into the House Commerce Bill, was not taken up by the Senate.

Mr. Chairman, I believe the task at hand is straightforward. Change the Organic Act of 1890, refocus the NWS on a set of core missions including issuing of severe weather warnings to the public. Remove the NWS from private sector functions and out of producing products that compete with those produced by the commercial weather industry.

If in 1997 we were to create the NWS for the first time and draft the Organic Act from scratch, it is clear that we would focus the newly created agency on the core missions that I have mentioned, and we would not request that the agency spend taxpayer money to duplicate services already available from the private sector.

The NWS should be praised for the great effort that it has put into modernization, the tremendous advances that it, the National Science Foundation and others have funded through research in atmospheric modeling that has been translated into significant progress in the quality and accuracy of both government and the commercial weather forecasts.

The NWS leadership has shown vision in capitalizing on computer technology and enhancing predictions. The benefit from this should be a more intense focus on the core missions, improving the nation's severe weather and flood warning systems, and the removal of the NWS from those areas where it is not needed.

If this was accomplished I believe that there would not only be enhanced general forecasts available to the public from commercial weather sources, but better public warnings from the government.

There is no need for the NWS to be producing free forecasts for business and industry. There is no need for the NWS to be producing routine daily forecasts for people who can already turn on their radio or television and get a quality forecast paid for through the forces of the marketplace.

Mr. Chairman, I know that this Subcommittee cannot pass specific authorizing or appropriating legislation. I would therefore request that you and the members of the Subcommittee recommend to the Senate Commerce, Science and Transportation Committee,

who will be considering an authorization bill for NOAA/NWS this Session, that they consider and pass specific legislation similar to what was approved by the House of Representatives last Session. I am referring to a provision attached to my testimony that was included in the 1996 NOAA Authorization Bill, H.R. 3322.

This single action alone will be a significant step towards returning the NWS to a core mission, reducing the work load of the NWS, and setting the stage for a true modernization of the NWS that can take advantage of the technological tools that it has developed to enhance severe weather and flood warnings to all Americans.

I believe that there is no doubt that the commercial weather industry is capable of meeting the remaining weather demands of the American people. Accordingly, I also urge the Subcommittee to request a GAO study of the NWS, with the objective of:

- (1) Focusing the NWS on a well defined core mission
- (2) Establishing the National Center for Environmental Prediction as a single point source for all NWS warnings
- (3) The elimination of general public forecasts
- (4) The elimination of forecasts for industry, for special interests, for end users, and of value added products.

Mr. Chairman, it should be noted that while I am here talking about refocusing the NWS on a core mission, the NWS itself is today going in the opposite direction. It is looking to expand its activity and intrude upon areas that the private sector is already actively engaged in.

I believe, if left alone, this trend will continue, because the modernization program which the public has funded, is leading to a significant reduction in staff needs as modern technology takes over the work that previously was done by slower technology or by hand.

My message today is a simple one. Remove the NWS as competitor to the commercial weather industry, pull the NWS back to the borders of needed core functions, and allow the highly competitive market forces within the commercial weather industry and the public, to produce the weather reports, forecasts and other products needed by industry, government and the American people.

To do so will cost the United States government nothing and in fact will benefit the budget through funding reduction on the one hand and the generation of taxes by the commercial activities that result, on the other.

Once that is achieved, it will be much easier to focus on the issue of "contracting out" or "privatization" of the remaining core functions, if Congress has such a desire. I do not support doing that, because I believe that once the Weather Service is focused on core missions and on being a weather and flood warning agency of excellence, there will be a better cost justification for its remaining activities.

Mr. Chairman, I would like to thank you very much for allowing me to address this very important issue and I would be very happy to answer any questions you might have.

IN THE SENATE OF THE UNITED STATES

JUNE 3, 1996
Recessed, read twice and referred to the Committee on Commerce, Science,
and Transportation

AN ACT

To authorize appropriations for fiscal year 1997 for civilian science activities of the Federal Government, and for other purposes.

98

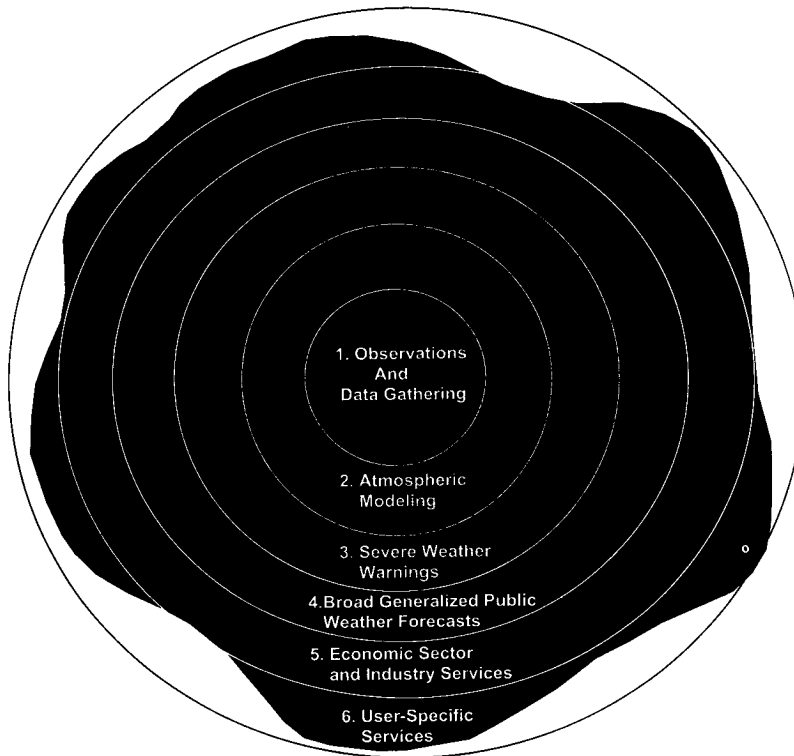
SEC. 462. DUTIES OF THE NATIONAL WEATHER SERVICE.

- (a) IN GENERAL.—To protect life and property and enhance the national economy, the Secretary, through the National Weather Service, except as outlined in subsection (b), shall be responsible for—
- (1) forecasts and shall serve as the sole official source of weather warnings;
 - (2) the issue of storm warnings;
 - (3) the collection, exchange, and distribution of meteorological, hydrological, climatic, and oceanographic data and information; and
 - (4) the preparation of hydrometeorological guidance and core forecast information.
- (b) COMPETITION WITH PRIVATE SECTOR.—The National Weather Service shall not compete, or assist other entities to compete, with the private sector when a

99

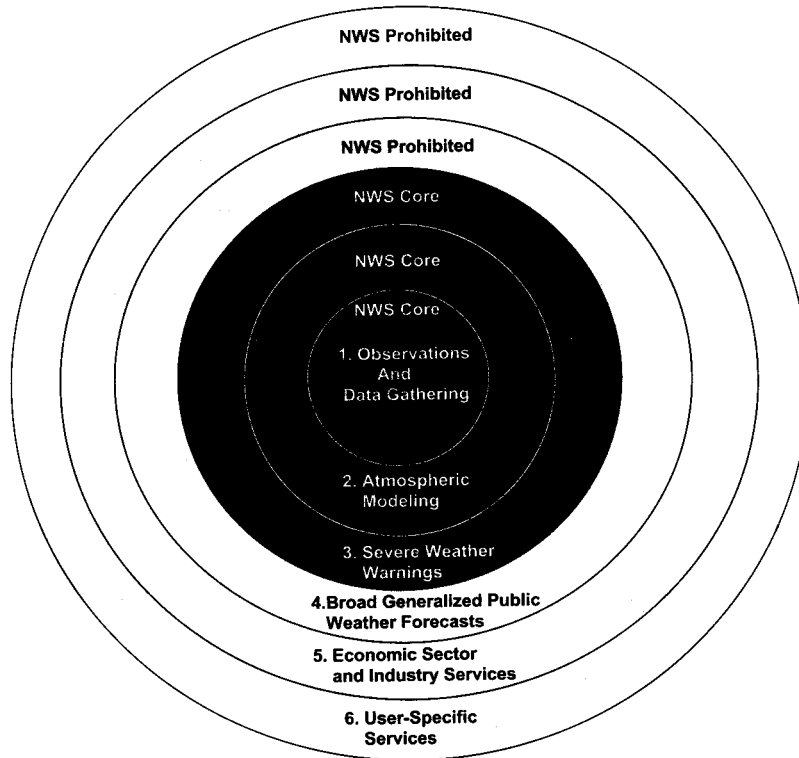
- service is currently provided or can be provided by commercial enterprise, unless—
- (1) the Secretary finds that the private sector is unwilling or unable to provide the services; and
 - (2) the service provides vital weather warnings and forecasts for the protection of lives and property of the general public.
- (c) AMENDMENTS.—The Act of 1890 is amended—
- (1) by striking section 3 (15 U.S.C. 313); and
 - (2) in section 9 (15 U.S.C. 317), by striking all after "Department of Agriculture" and inserting in lieu thereof a period.
- (d) REPEAL.—Not later than 60 days after the date of the enactment of this Act, the Secretary shall submit to the Committee on Science of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report detailing all National Weather Service activities which do not conform to the requirements of this section and outlining a timetable for their termination.

Figure 1
National Weather Service Core Missions
And Relations To Private Sector
Current Boundary Analog Under The Organic Act



Shaded Area shows current boundary of NWS operation

Figure 2
National Weather Service Core Missions
And Relations To Private Sector
Proposed Boundary Analog Under A Revised Organic Act



Shaded Area shows proposed boundary of NWS operation

GAO**United States General Accounting Office****Testimony**

Before the Subcommittee on Oversight of Government
Management, Restructuring and the District of Columbia,
Committee on Governmental Affairs, U.S. Senate

For Release on Delivery
Expected at
12:30 p.m.
Thursday,
April 24, 1997

**WEATHER SERVICE
MODERNIZATION****Risks Remain That Full
Systems Potential Will Not
Be Achieved**

Statement of Joel C. Willemsen
Director, Information Resources Management
Accounting and Information Management Division



Mr. Chairman and Members of the Subcommittee:

We are pleased to be here today to discuss the National Weather Service's (NWS) systems modernization program. At an estimated cost of about \$4.5 billion, it is one of the largest modernization programs in the federal government. The modernization is vital to the Weather Service's plans for improving operations; at the same time, it is intended to help NWS streamline and downsize its organization, and is an effort that we continue to endorse. As with most large systems-development projects, however, this program faces persistent challenges that must be overcome if the considerable anticipated benefits of full modernization are to be realized. Our concerns led us to place the Weather Service effort on our 1995 list of high-risk government programs, where it remains today.¹

The work of the National Weather Service is critically important to all Americans, as the United States experiences considerable severe weather. In a typical year, the U.S. is pummeled by about 10,000 violent thunderstorms; 5,000 floods; 1,000 tornadoes; and several hurricanes. As we have seen in recent months, unpredictable weather can wreak havoc in people's lives; sometimes the difference between tragedy and recoverable loss lies in the ability of early forecasts and warnings of potentially dangerous weather to help protect life and property.

¹High-Risk Series: An Overview (GAO/HR-95-1, February 1995) and High-Risk Series: Information Management and Technology (GAO/HR-97-9, February 1997).

BACKGROUND

NWS uses a variety of systems and manual processes to collect, process, and disseminate weather data to and among its network of field offices and regional and national centers. Prior to the modernization, these systems and processes were largely outdated. Radar equipment dated back to the 1950s, and much of the current information processing, display, and data communications system has been in use since the 1970s.

To enhance its ability to deliver weather services, NWS determined some 15 years ago to use the power of technology to "do more with less." To reach the goal of better forecasting and earlier warnings with a smaller, downsized operation, the Weather Service has been acquiring new observing systems—including radars, satellites, and ground-based sensors—as well as powerful forecaster workstations. The goals of the modernization were to (1) achieve more uniform weather services nationwide, (2) improve forecasting, (3) provide more reliable detection and prediction of severe weather and flooding, (4) permit more cost-effective operations, and (5) achieve higher productivity. The modernization includes four major systems-development programs, which I will briefly describe.

The Advanced Weather Interactive Processing System (AWIPS)

This program integrates, for the first time, satellite, radar, and other data to support weather forecaster decision-making and communications; it is the linchpin of the NWS

modernization. Operating under a \$550-million funding cap, the system is expected to be fully deployed in 1999. AWIPS development systems have been delivered to 16 locations nationwide; this represents the first two of six modules, or "builds." AWIPS is planned for a total of 152 locations once fully deployed.

The Next Generation Geostationary Operational Environmental Satellite (GOES-Next)

This is a program to acquire, launch, and control five satellites for identifying and tracking severe weather events, such as hurricanes. The first satellite was launched in 1994, and the second in 1995. Three more satellites are planned for launch between now and 2002. The total cost for these five satellites is estimated to be just under \$2 billion.

The Next Generation Weather Radar (NEXRAD)

This is a program to acquire 163 Doppler radars.² Largely deployed, these radars have helped NWS increase the accuracy and timeliness of warnings for severe thunderstorms, tornadoes, and other hazardous weather events. Scheduled for completion this year, 121 of a planned 123 NWS NEXRAD radars have been delivered to operational locations. The cost of this program is just under \$1.5 billion.

²This includes radars for NWS, the Air Force, and the Federal Aviation Administration.

The Automated Surface Observing System (ASOS)

This is a program to automate and enhance methods for collecting, processing, and displaying surface weather conditions, such as temperature and precipitation, and to replace human weather observers. Scheduled for completion in fiscal year 1998, the system has been installed at 265 of 314 planned NWS operational locations. Estimated costs for ASOS are about \$351 million; this includes the NWS units and 554 units for the Federal Aviation Administration and the Department of Defense.

The modernization also includes upgrades to existing systems, improved weather models, and the acquisition of several smaller systems. In addition, NWS is restructuring its field offices to be more efficient; table 1 indicates the before-and-after plan.

Table 1: NWS Office Restructuring Plan

PRE-MODERNIZATION	FUTURE
52 Weather Service Forecast Offices 204 Weather Service Offices	119 Weather Forecast Offices ^a
3 National Centers	9 National Centers
13 River Forecast Centers	13 River Forecast Centers ^a

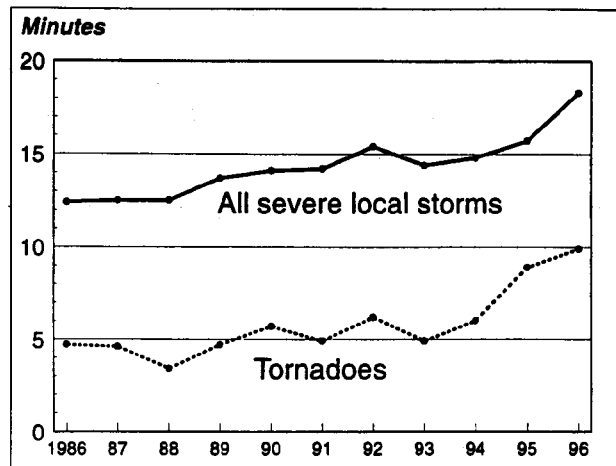
^aThese offices are to be co-located.

Source: NWS.

IMPORTANT SUCCESSES ACHIEVED, YET
PROBLEMS HAVE HINDERED THE MODERNIZATION

The Weather Service has generated better data--particularly with the new radars and satellites--and greatly improved forecasts and warnings. These can be related directly to saving lives and reducing the effects of natural disasters. As shown in figure 1, lead times of warnings for severe storms and tornadoes improved by about 5 minutes between 1986 and 1996, which is not insignificant. With tornadoes, for example, it can mean the difference in whether people have time to reach shelter. In some instances, lead times are much earlier. Last year, for instance, NWS issued flood potential "statements" 2-3 days in advance of Hurricane Fran. Flash flood warnings were issued with 6 hours' lead time. Similarly, in the East Coast blizzard of 1996, NWS issued forecasts 3 to 5 days in advance.

Figure 1: NWS Warning Lead Time for Severe Local Storms, 1986-1996 (in minutes)



Source: NWS.

Notwithstanding such successes, however, each of the four programs has experienced cost increases and schedule delays.³ Some of these increases and delays can be attributed to changes in requirements; others were caused by program management and development problems.

³A list of related GAO reports and testimony on the NWS modernization, including its four primary components, appears at the end of this statement.

We reported in 1995 that six of eight sensors in the ASOS system did not meet contract specifications for accuracy or performance. For example, the precipitation accumulation sensor underreported rainfall amounts during heavy downpours, and the temperature and dew point sensor readings frequently fell short of dew point reliability requirements. Some of these shortfalls occurred because of the contractor's failure to deliver products that met specifications, and others resulted from the failure of government-furnished equipment to meet specifications. In addition, we found that ASOS users from the aviation, meteorology, and climate communities had needs that the ASOS system, as specified, did not satisfy.

We recommended that NWS define and prioritize--in conjunction with ASOS users--all system corrections, enhancements, and supplements necessary to meet valid user needs. We further recommended that NWS formulate--again in conjunction with ASOS users--explicit system performance and cost/benefit criteria governing the release of human observers. Because of these problems, NWS delayed plans for releasing human weather observers and implemented actions to correct shortfalls in meeting specifications and to address other user concerns.

In reference to NEXRAD, we testified in 1995 that many NWS and Air Force radars were not available nearly as often as required. For example, between 10 and 62 percent of Air Force NEXRAD radars were falling short of availability requirements. (NWS did not know if its radars were meeting the availability requirement because it was not

monitoring availability on a site-by-site basis.) Further, we found that a radar upgrade to address one cause of unavailability—the lack of an uninterruptible power supply—was not to be completed until fiscal years 1999 and 2002 for the Air Force and NWS, respectively.

We recommended that NWS analyze and monitor system availability data on a site-specific basis for operational NEXRADs and correct any shortfalls in system availability revealed by the analysis. We also recommended that the Air Force improve the reliability of Air Force NEXRAD availability data and correct any shortfalls found. NWS and the Air Force did initiate steps in 1995 to implement our recommendations to improve NEXRAD availability.

In terms of staffing, the sizable reductions promised as a result of the modernization will not be realized. While NWS originally planned to reduce staff by 21 percent, we reported in 1995 that the goal had been scaled back to 8 percent. NWS attributes the reduced goal primarily to the need for more staff than originally envisioned to operate new systems, and to other unanticipated requirements.

REMAINING RISKS

Mr. Chairman, NOAA's ultimate success in completing the modernization depends, in part, on how well and how quickly it can complete a systems architecture⁴ and address specific risks associated with the crucial AWIPS system. The modernization needs an overall architecture to guide systems development; NWS agrees that such a technical blueprint is necessary, and is currently working on one. Yet until such an architecture is developed and enforced, the modernization will likely continue to be subject to higher costs and reduced performance. This is an important point as component systems continue to evolve to meet additional demands and take advantage of improved technology. We cannot emphasize too strongly the need for an overall architecture to guide system evolution. An architecture would help ensure that changes to NEXRAD, for example, are compatible with the many systems with which NEXRAD must exchange data.

⁴A systems architecture is a blueprint to guide and constrain the development and evolution (i.e., maintenance) of a collection of related systems; it can be viewed as having both logical and technical components. At the *logical* level, the architecture provides a high-level description of the organizational mission being accomplished, the business functions being performed and the relationships among functions, the information needed to perform the functions, and the flow of information among functions. At the *technical* level, the architecture provides the rules and standards needed to ensure that the interrelated systems are built to be interoperable, portable, and maintainable. These include specifications of critical aspects of the component systems' hardware, software, communications, data, security, and performance characteristics.

As we have reported several times over the past few years, *full* utilization of the data from the new observing systems has been prevented by delays and continuing problems with AWIPS. We have made several recommendations that we feel will strengthen the Weather Service's ability to acquire AWIPS. First, we recommended that NWS ensure that each "build" is fully tested and all material defects corrected before beginning software development associated with the next build. Second, we recommended that NWS establish a software quality assurance program to increase the probability of delivering promised AWIPS capability on time and within budget. Third, we recommended that NWS obtain an independent assessment of the cost to develop and deploy AWIPS.

Progress to date in these areas has, however, been uneven, and we remain concerned about AWIPS development risks--risks that threaten the system's ability to be completed on time, within budget, and with the functional capability that AWIPS must be able to provide. Until AWIPS is deployed and functioning properly, NWS will not be able to take full advantage of the nearly \$4 billion investment it has made in the other components of the modernization.

After early successes in demonstrating the technical feasibility of system functions, design problems and disagreements between NOAA and the development contractor in 1993-1994 stymied progress. Some development responsibility was brought in-house--to NWS/NOAA labs--in 1995. The AWIPS program strategy was changed again in 1996,

when even more development responsibility—for AWIPS data acceptance, processing, and display capabilities—was brought in-house, primarily to NOAA's Forecast Systems Laboratory (FSL). At that time, NWS decided to use FSL's prototype system, called Weather Forecast Office (WFO)-Advanced, which was being developed in parallel with AWIPS as a risk-reduction tactic.

NWS officials chose WFO-Advanced because of its demonstrated superior data-acceptance, processing, and display capability over the contractor's version, hoping that it would enable the agency to deploy these AWIPS capabilities to field operations more quickly. The contractor did, however, retain responsibility for communications, system monitoring and control, and other capabilities. With these changes, NWS expects AWIPS) to make its 1999 target date for full deployment, within the \$550-million cap.

As we reported in December 1994, NOAA/NWS labs are research and development operations that primarily develop prototype systems; as such, they did not employ software development processes characteristic of a software-production environment. Specifically, the labs did not have the software quality assurance and configuration management processes, among others, sufficient to ensure production of stable, reliable

software code.⁵ Developing software code for use in one or two prototype installations requires a far less rigorous approach than what is needed when nationwide deployment is planned. However, some of the software the NOAA/NWS labs were developing was intended for operational use in AWIPS and was essentially being handed off directly from the labs to the contractor. We therefore recommended that NWS and NOAA strengthen their processes for developing production-quality software code.

With the 1995 and 1996 AWIPS development changes, significantly more design and development responsibility has been transferred to the government, in particular to NOAA's FSL. In visiting FSL in Boulder, Colorado, we found that--with the exception of one subsystem that we specifically discussed in 1994--the question of capability remained: lab quality assurance and configuration management processes for production-level software were still lacking. However, NWS and NOAA officials said that they have heeded our 1994 recommendations and are improving their processes in other ways. They said that in order to preserve the labs' research and development missions, they do not wish to impose any unnecessary, rigorous software development procedures on the labs. Instead, NOAA management plans to play a more active role in preparing the government-furnished software for the contractor.

⁵*Software quality assurance* refers to a program that independently (1) monitors whether the software and the processes used to develop it fully satisfy established standards and procedures, and (2) ensures that any deficiencies in the software product, process, or their associated standards are swiftly brought to management's attention. *Software configuration management* refers to a process by which changes to software products are controlled. It includes identification of products to be controlled, accounting for changes to these products, and reporting on the products' status.

According to NWS officials, they plan to improve the software development processes for WFO-Advanced and other government-developed software using staff from NWS headquarters, NOAA's systems acquisitions division, and the contractor. Specifically, NWS plans to (1) more fully document the lab's design and software code, (2) design the integration of government-furnished software and contractor-developed software, (3) fully test all government software before it is turned over to the contractor, and (4) strengthen quality assurance and configuration management. To help accomplish this, NWS has established several specific contract task orders.

Weather Service officials acknowledge that preparing WFO-Advanced for the contractor is a large task because it comprises such a significant portion of the AWIPS software. In addition, officials understand that there is no room for schedule delays due to unforeseen problems. They feel confident, however, that they can meet this challenge because of the steps I have just described, and because they have experience in turning government software over to a contractor. For example, NWS' Office of Hydrology provided hydro-meteorological software to the contractor for the first AWIPS module ("build 1"), which was successfully tested last summer. In addition, NWS officials said that they are applying to AWIPS lessons learned from their configuration management experiences in the NEXRAD and ASOS development projects.

NOAA has put into place appropriate plans and procedures to mitigate these risks; how it implements these plans and procedures will be critical if NOAA is to avoid turning

the risks into actual problems. Unfortunately, systems development risks in large projects such as AWIPS frequently do turn into problems. And, as discussed, AWIPS has suffered development setbacks in the past. Given these circumstances, we believe it will be extremely difficult for NOAA and NWS to develop and deploy the AWIPS system within the \$550-million cap.

What can be done to minimize such risks? First, NOAA and NWS management need to be vigilant to identify new problems with AWIPS software development. New software and WFO-Advanced must be fully tested to ensure that they are up to production quality and will not cause complications when integrated with other AWIPS software. Second, we believe that NOAA needs to renegotiate as quickly as possible the contract for AWIPS builds 4 through 6. While NOAA officials expect no major cost or schedule changes, this is not a guarantee; NOAA must exercise close oversight of this process.

GEOSTATIONARY OPERATIONAL ENVIRONMENTAL SATELLITE (GOES)

Another important element of the Weather Service modernization is the acquisition of geostationary operational environmental satellites (GOES). These satellites are uniquely positioned to be able to observe the development of severe weather, such as hurricanes and thunderstorms, and provide information allowing forecasters to issue timely warnings. Satellites in the current series will, however, begin to reach the end of their

useful lives within 5 years; NOAA is now planning to procure replacements, which will be very similar to the current satellites. At issue, Mr. Chairman, is the type of satellite system to build for the longer term, especially in light of NOAA's budget, which is likely to remain constrained in the immediate years ahead. Our report on both short- and long-term satellite replacements was released last month.⁶

In brief, we found NOAA's approach for the near term reasonable, although we recommended that the agency clarify its policy for replacing partially failed satellites and backing up planned launches. For the longer term, we concluded that changing the GOES system design offers many potential benefits: improved performance, lower costs, and more closely meeting the needs of forecasters.

Several new approaches have been suggested in recent years, by government, academic, and industry experts; many include technologies unavailable when the present series of satellites was designed. These approaches have pros and cons; all options would require careful engineering analysis before an informed decision about the future of the GOES program can be made.

Our concern centers on NOAA's delay in conducting such analyses and developing specific proposals. At present, NOAA anticipates beginning its follow-up program in

⁶Weather Satellites: Planning for the Geostationary Satellite Program Needs More Attention (GAO/AIMD-97-37, March 13, 1997).

2003 at the earliest. Given that developing a new satellite takes up to 10 years, deferring a start until 2003 likely means that NOAA will have to rely on its current, early-1980s-design satellites until about 2013.

Mr. Chairman, given the range of options that exist for a significantly improved GOES system, the Congress may wish to evaluate the costs and benefits of different approaches to the timing, funding, and scope of the follow-up program. This could include a potential role for the National Aeronautics and Space Administration's advanced spacecraft technology programs.

In summary, we see clear benefits in the National Weather Service modernization--improved forecasts and warnings. We also see risks--risks that can only be reduced through development and enforcement of a systems modernization architecture, careful implementation of planned mitigation techniques in the case of AWIPS, and commitment to earlier planning in the case of the GOES satellites.

This concludes my statement, Mr. Chairman. I would be happy to respond to any questions you or other Members of the Subcommittee may have at this time.

ATTACHMENT

ATTACHMENT

RELATED GAO PRODUCTS

National Oceanic and Atmospheric Administration: Weather Service Modernization and NOAA Corps Issues (GAO/T-AIMD/GGD-97-63, March 13, 1997).

Weather Satellites: Planning for the Geostationary Operational Environmental Satellite Program Needs More Attention (GAO/AIMD-97-37, March 13, 1997).

High-Risk Series: Information Management and Technology (GAO/HR-97-9, February 1997).

NOAA Satellites (GAO/AIMD-96-141R, Sept. 13, 1996).

Weather Forecasting: Recommendations to Address New Weather Processing System Development Risks (GAO/AIMD-96-74, May 13, 1996).

Weather Forecasting: NWS Has Not Demonstrated that New Processing System Will Improve Mission Effectiveness (GAO/AIMD-96-29, Feb. 29, 1996).

Weather Forecasting: New Processing System Faces Uncertainties and Risks (GAO/T-AIMD-96-47, Feb. 29, 1996).

Weather Forecasting: Radars Far Superior to Predecessors, but Location and Availability Questions Remain (GAO/T-AIMD-96-2, Oct. 17, 1995).

Weather Service Modernization Staffing (GAO/AIMD-95-239R, Sept. 26, 1995).

Weather Forecasting: Radar Availability Requirements Not Being Met (GAO/AIMD-95-132, May 31, 1995).

Weather Forecasting: Unmet Needs and Unknown Costs Warrant Reassessment of Observing System Plans (GAO/AIMD-95-81, April 21, 1995).

Weather Service Modernization Questions (GAO/AIMD-95-106R, March 10, 1995).

Weather Service Modernization: Despite Progress, Significant Problems and Risks Remain (GAO/T-AIMD-95-87, Feb. 21, 1995).

ATTACHMENT

ATTACHMENT

Meteorological Satellites (GAO/NSIAD-95-87R, Feb. 6, 1995).

High-Risk Series: An Overview (GAO/HR-95-1, February 1995).

Weather Forecasting: Improvements Needed in Laboratory Software Development Processes (GAO/AIMD-95-24, Dec. 14, 1994).

Weather Forecasting: Systems Architecture Needed for National Weather Service Modernization (GAO/AIMD-94-28, March 11, 1994).

Weather Forecasting: Important Issues on Automated Weather Processing System Need Resolution (GAO/IMTEC-93-12BR, Jan. 6, 1993).

Weather Satellites: Action Needed To Resolve Status of the U.S. Geostationary Satellite Program (GAO/NSIAD-91-252, July 24, 1991).

Weather Satellites: Cost Growth and Development Delays Jeopardize U.S. Forecasting Ability (GAO/NSIAD-89-169, June 30, 1989).

(511425)

[Docket No. 91045-1009]

Policy Statement on the Weather Service/Private Sector Roles**AGENCY:** National Oceanic and Atmospheric Administration, Commerce.**ACTION:** Notice.

SUMMARY: This notice publishes the policy statement on the weather service/private sector roles entitled "The National Weather Service (NWS) and Private Weather Industry: A Public-Private Partnership." This statement was jointly prepared by the Privatization Branch of the Office of Management and Budget (OMB) and the National Oceanic and Atmospheric Administration's National Weather Service (NWS). The process, which began in early 1989, resulted in the milestone publication of a draft policy statement in the Federal Register on December 1, 1989 (54 FR 52839). During the past year, the comments received, as well as a continuing dialogue with the private sector and internal NWS and OMB coordination, have resulted in this policy statement.

The policy statement focuses on the concept of a public-private partnership to enhance total weather services to the American public, government, and industry. It designates the NWS as the "single official" voice in the critical area of severe weather, hurricane, flood, and tsunami warnings. It emphasizes the need to protect the free and open exchange of meteorologic, hydrologic, and oceanographic data as well as delimiting the areas in which the NWS and the private sector will provide products and services. It provides a mechanism to implement this policy and establishes a strong basis for a Government/private sector partnership and should minimize any misunderstandings and false expectations which may occur between both parties. It offers the close cooperation and coordination needed to ensure that the public receives the best possible weather service.

Generally the comments received were favorable. Some, however, reflected a concern on the part of the private weather industry that the policy statement could provide restraints on existing activities. Several comments urged the NWS to more clearly define what the relationship between the public and private weather industry should be. The information which follows will address the significant comments received and the new areas which were added to the policy statement. In addition, there were

comments concerning clarity in general and changes were made in both restructuring and rewording the statement in order to respond.

Comment—Comments were received from the private weather industry expressing concern on what it perceives as a limited role for it in providing weather services to the general public.

Response—The NWS firmly believes that the private weather industry plays an important and essential role as a partner in ensuring that the Nation receives the full benefit of weather and hydrometeorological information for promoting protection of life and property, and economic prosperity. The final policy statement more clearly defines areas in which the NWS and the private weather industry will provide such products and services as well as a mechanism to implement the policy.

Comment—Under the section entitled General Criteria, the NWS noncompetition paragraph will be better stated. "The NWS will not compete with the private sector in those areas where the private sector services are available." Along these same lines, a responder voiced concern over the NWS providing specialized agricultural services. Another expressed concern about the NWS withdrawing from providing those same services.

Response—The NWS will not compete with the private sector when a service is currently provided or can be provided by commercial enterprises, unless otherwise directed by applicable law, e.g., the provision of NOAA's Appropriations Act concerning the fruit frost program which has attracted some private sector interest.

The NWS will also assure the public of continuation of services when those services are not available from the private sector, unless directed otherwise.

Comment—Implication of the use of the words "single" and "official," especially in combination, was of great concern to one of the responders. He states that the connotation of the use of the word "official" means

"governmental." Then the wording is not objectionable, but if there is any intent here which suggests that by making the NWS the "single official voice," the private weather industry is to be restricted or limited in any way in providing to the public its own weather forecasts or information regarding severe weather or floods, then this is a serious incursion into the area of freedom of speech.

Response—In order to avoid confusion on the part of the public, it is vital that there be one single "official"

voice when issuing warnings of life threatening situations. The policy statement is not intended to discourage or preclude the private sector from providing comments and advice on publicly issued warnings, but the distinction between the NWS "official" warning and these comments and interpretations of it must be clear to the public. This is in no way a restraint on freedom of speech.

Comment—Placing scientific data, especially real-time information, that can affect decisions concerning the protection of life and property and the ability of firms in the private weather sector as well as individual meteorologists and scientists to access, analyze, comment upon, predict from, and disseminate information is of grave concern. Placing such resources in the hands of a limited number of major corporations who have control, not only over the collection of the data but its dissemination and the establishment of the price that will be paid for the receipt of the data, coupled with the ability to pick and choose who may be given access to that data, needs to be stopped.

Response—The NWS provides access to near real-time alphanumeric and graphical data and information through a variety of ways. This access is open to anyone in the marketplace who signs an agreement with the NWS or a contractor who has been competitively selected to provide specialized services for the delivery of and access to data by the private sector and others requiring that data. An example is the Contel ASC contract to deliver the NOAA Weather Wire Service to the Government and other subscribers around the Nation at an agreed to price. Contel, like any NWS contractor, cannot pick and choose who receives the data but is required to provide the data both efficiently and at a more reasonable price than the NWS could do by itself. Currently the NWS costs are based on the incremental access costs, but a fair market pricing policy is being developed as a result of the 1990 Budget Reconciliation Act.

Comment—One responder expressed concern over the direct participation of NWS personnel with the radio and television media.

Response—The policy limits direct NWS participation with the radio and television media to those situations requiring urgent public action, as in the case of severe or extreme weather and flooding or to education and preparedness activities.

Comment—Representatives of the World Meteorological Organization and others questioned how the NWS intends to ensure that the free and open

international exchange of data concept continues.

Response—The NWS has incorporated into this final policy statement a section requiring that the private weather industry and the NWS work together to protect the free and open international exchange of data provided by the NWS by ensuring that the data are not used to compete directly with or interfere with internal policies of national meteorological agencies in those countries where they also provide commercial weather services. Any activity by a U.S. weather company in another country must, of course, be in accordance with the laws and established practices of that country.

Comment—Representatives of the library community questioned whether this policy statement would in any way interfere with existing laws, e.g., title 44 U.S.C., which requires NOAA and NWS publications to be made available through the Depository Program regardless of privatization.

Response—This policy statement in no way changes or alters existing arrangements among NOAA and the NWS and the library community for the receipt of its data and information.

Comment—Insert the following two phrases in the section entitled "The Private Weather Industry."

- Provide climatological summaries, probability values of weather extremes, and similar materials for design and construction; and

- Provide special case-oriented retrospective weather reconstruction and provide expert testimony relating to them for weather-related private litigation.

Response—The first phrase dealing with the provision of climatological summaries, probability values of weather extremes, and similar materials for design and construction has been included in the final policy statement. However, the second phrase was not included since the subject of testimony in litigation is too complex for this statement. The issue is addressed in detail in Federal regulations (15 CFR parts 15a and 909.4) which state that NOAA employees will not provide such testimony and generally anticipate that the private sector will. However, exceptions exist where NOAA and the NWS could provide expert testimony, for example, in Government-related cases. This, of course, in no way precludes the private weather industry's recognized role to provide expert

testimony in both civil and Government litigation.

This policy statement is the first of its kind to be developed within NDAA. It applies only to the National Weather Service and should not be interpreted to apply to any other component of NOAA nor to prejudice any future decisions by NOAA and its components with regard to relations with private sector users of their services and products.

FOR FURTHER INFORMATION CONTACT:
Edward M. Gross, Constituent Affairs Officer (NWS), 1325 East-West Highway, Silver Spring, Maryland 20910, (301) 427-7258.

Elbert W. Paisley, Jr.,
Assistant Administrator for Weather Services.

Policy Statement of the Weather Service/Private Sector Roles

The National Weather Service and the Private Weather Industry: A Public-Private Partnership

Accurate and timely weather and river forecast and warning systems are vital to the safety and well-being of the Nation's population. Weather and water resources forecasting harnesses modern advances in information to increase the productivity of American industry, thereby contributing to economic growth. A public-private partnership is needed to provide American industry with the most effective means to increase productivity.

A continuing strong cooperative relationship between the National Weather Service (NWS) and the private sector will provide both industry and the general public with more accurate and timely weather and river forecasts and other hydrometeorological products. An effective partnership will allow each sector to perform those functions which it can carry out best and avoid unnecessary duplication or competition between the Government and the private sector.

The purpose of this policy statement is to define the relationship and respective roles of NWS and the private sector to ensure that Federal resources are focused on providing essential core functions and to encourage the private sector to provide those services which it is ideally suited to provide.

The goal is a partnership which enhances total service to the American public, Government, and industry.

General Criteria

The policy statement is based on the

respective roles of NWS and the private sector described below:

- The primary mission of the National Weather Service is the protection of life and property and the enhancement of the national economy. Hence, the basic functions of NWS are the provision of forecasts and warnings of severe weather, flooding, hurricanes, and tsunami events; the collection, exchange, and distribution of meteorological, hydrologic, climatic, and oceanographic data and information; and the preparation of hydrometeorological guidance and core forecast information. The NWS is the single "official" voice when issuing warnings for life-threatening situations and is the source of a common national hydrometeorological information base. The national information base forms an infrastructure on which the private sector can build and grow.

- The NWS will not compete with the private sector when a service is currently provided or can be provided by commercial enterprises, unless otherwise directed by applicable law.

- The private weather industry is ideally suited to put the basic data and common hydrometeorological information base from the NWS into a form and detail that can be utilized by specific weather and water resources-sensitive users. The private weather industry provides general and tailored hydrometeorological forecasts and value-added products, and services to segments of the population with specialized needs.

Policy

In order to carry out its mission and foster this public-private partnership, NWS shall:

- Collect and exchange hydrometeorological data and information on a national and international basis;

- Issue warnings, and forecasts of severe weather, floods, hurricanes, and tsunami events which adversely affect life and property;

- Issue weather, river, and water resources forecasts, and related guidance materials used to form a common national hydrometeorological information base for the general public, private sector, aviation, marine, forestry, agricultural, navigation, power interests, land and water resources management agencies, and emergency managers at all levels of government;

- Provide climatological summaries, frequencies, and limits of hydrometeorological elements to

establish a basis for various Federal regulations and design criteria and to support the real-time operations of federally-operated facilities:

- Provide private weather access to near real-time alphanumeric and graphical data and information through a variety of techniques:
- Establish basic quality controls for the observed and collected data, and provide the user community with sufficient information to evaluate data and forecast reliability and applicability;
- Conduct and support research and development of atmospheric and hydrometeorological models;
- Produce global, national, or general regional atmospheric models and river basin models.

The NWS also recognizes the important contribution that private broadcast meteorologists, newspapers, and news agencies make to the timely dissemination of NWS watches and warnings and other products that may require public response. The relationship is one of mutual support and cooperation. In order to protect the competitive nature of the privately-owned media, direct NWS participation with the radio and television media should be limited to those situations requiring urgent public action as in the case of severe or extreme weather and flooding or educational and preparedness activities.

The private weather industry provides:

- Tailored weather, river, and water resources forecasts detailed hydrometeorological information, consultation, and data for weather, river, and water resources sensitive industries and private organizations;
- Value-added products such as weather and hydrologic-related computer hardware and software, observational systems, imaging systems, displays, communications, charts, graphs, maps, and images for clients;
- Climatological summaries, probability values of weather extremes, and similar material for specific design and construction problems.

Free and open international exchange of data.

- The private weather industry and the NWS will work together to protect the free and open international exchange of meteorologic, hydrologic, and oceanographic data provided by the NWS by ensuring that the data are not used to compete directly with or to interfere with internal policies of national meteorological agencies in those countries where they also provide commercial weather services:

This concept of a public-private partnership is not intended to discourage or preclude the private sector from providing comments and advice on publicly issued warnings and forecasts nor government agencies from obtaining weather services from the private sector. However, in the critical area of severe weather, hurricane, flood, and tsunami warning, the NWS is the single "official" voice.

Implementation

It is the responsibility of all NWS officials and employees to comply with this policy. An effective partnership requires that the parties understand each other's role and be sensitive to the constraints and aspirations that govern their respective actions. This policy statement cannot cover all possibilities. However, it should minimize any misunderstandings and false expectations between both parties. Close coordination and cooperation are essential to ensure that the public receives the best possible weather service. Regional and local NWS officials should arrange periodic meetings with private meteorologists and hydrologists to promote an exchange of ideas which will be mutually beneficial and increase understanding between the two groups. The overriding goal of this policy statement is to ensure that the Nation receives the full benefit of weather and hydrometeorological information to promote safety of life and property and economic prosperity. Effective partnership between the NWS and the private meteorological sector is the means to that end.

Persons who believe that NWS or any of its employees are providing specialized services contrary to this policy may bring the matter directly to the attention of the Assistant Administrator for Weather Services, 1325 East-West Highway, room 18130, Silver Spring, Maryland 20910. The Assistant Administrator for Weather Services shall ascertain the facts and report promptly to the complainant the results of his inquiry and advise him of any remedial action that will be taken by the NWS to assure full compliance with this policy. In the event that the situation resulted from decisions made by the Assistant Administrator, the resolution will take place at the National Oceanic and Atmospheric Administration level.

[FR Doc. 91-1242 Filed 1-15-91; 11:37 am]
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**DEPARTMENTS OF COMMERCE, JUSTICE, AND
STATE, THE JUDICIARY, AND RELATED
AGENCIES APPROPRIATIONS FOR 1997**

HEARINGS
BEFORE A
SUBCOMMITTEE OF THE
COMMITTEE ON APPROPRIATIONS
HOUSE OF REPRESENTATIVES
ONE HUNDRED FOURTH CONGRESS
SECOND SESSION

SUBCOMMITTEE ON THE DEPARTMENTS OF COMMERCE, JUSTICE, AND
STATE, THE JUDICIARY, AND RELATED AGENCIES

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NOTE: Under Committee Rules, Mr. Livingston, as Chairman of the Full Committee, and Mr. Obey, as Ranking
Minority Member of the Full Committee, are authorized to sit as Members of all Subcommittees.

JIM KULIKOWSKI, THERESE MCAULIFFE, JENNIFER MILLER, and KIM WOLTERSTORFF,
Subcommittee Staff

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WEBSITES

Many of the bureaus and components of the Department of Commerce have established Internet web sites to help inform the public, particularly to disseminate information. The bureaus are free to establish such web sites based on their own requirements. Hence, the Department's web presence is dynamic and evolving.

The Department does maintain an overall Commerce Home Page, as does the Office of the Secretary. These web sites contain references and links to many of Commerce's other web sites. The Commerce web sites are listed below.

Commerce:

<http://www.doc.gov>

Office of the Secretary:

<http://www.osc.doc.gov>

EDA:

<http://www.doc.gov/agencies/eda/index.html>

<http://netstate.esa.doc.gov/occi>

<http://atlantis.fmi.org/parcels>

<http://www.aica.ua1r.edu/austineda/default.html>

Census:

<http://www.census.gov>

ESA:

<http://www.bes.doc.gov>

<http://www.aiaa-usa.gov>

ITAC:

<http://www.ita.doc.gov>

MBDA:

http://www.doc.gov/resources/MBDA_info.html

NOAA:

<http://columbia.wrc.noaa.gov/wrc.html>

<http://globe.fsl.noaa.gov>

<http://hpccl.hpcz.noaa.gov/cop/cop-home.html>

<http://www.globe.gov>

<http://www.hpcz.noaa.gov/>

<http://www.ndbc.noaa.gov/GLOBE/globe.html>

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<http://www.noaa.gov/nc/home/nc.html>

<http://www.noaa.gov/nc/home/dive.html>

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<http://www.noaa.gov/public-affairs/>

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<http://www.ndbc.noaa.gov/~grants/index.html>

<http://www.sio.noaa.gov>

HDQ

HDQ <http://www.wsc.noaa.gov>

HDQ <http://www.wrc.noaa.gov/mas>

NESDIS <http://nigcmccr.noaa.gov/general/lib/>

NESDIS <http://lib-www.noaa.gov/scdic/asia-www.html>

NESDIS <http://lib-www.noaa.gov/ices.html>

NESDIS <http://juliaa.ngdc.noaa.gov/8080/index.html>

NESDIS <http://mainat.web.noaa.gov>

NESDIS <http://naa.vfl.noaa.gov/>

NESDIS http://na.noaa.gov/NESDIS/NESDIS_Home.html

NESDIS <http://oldthunder.asc.wisc.edu/>

NESDIS <http://orbit-net.nesdis.noaa.gov/orahome/>

NESDIS <http://orbit-net.nesdis.noaa.gov/orahome/bsbr/bsbr/homepage.html>

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NESDIS <http://orbit-net.nesdis.noaa.gov/orahome/pbsai/pbsai/homepage.html>

NESDIS <http://orbit-net.nesdis.noaa.gov/orahome/sahomepage.html>

NESDIS <http://orbit1.nesdis.noaa.gov/8080/>

NESDIS <http://pegasus.nesdis.noaa.gov/satfinder.html>

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NEEDS <http://www.wcrlt.noaa.gov/needs/Library/libhome.html>

NMFS <http://161.158.134.104/nmfs/index.cfm>

NMFS http://chiba2.gso.uri.edu/cnwhc_home_page.html

NMFS http://chiba2.gso.uri.edu/cnwhc_home_page.html

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NMFS http://kingfish.ssp.mnfi.gov/80/tuesday/procs_res.html

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NMFS <http://research.nwfsc.noaa.gov/nrfis/index.html>

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NMFS <http://www.wr.noaa.gov/life/enangle.html>

NMFS <http://www.wr.noaa.gov/fish/home.html>

NMFS <http://www.wr.noaa.gov/fish/mnfi-sps/>

NMFS <http://205.155.38.7/index.html>

NMFS <http://boiaia.anhnra.noaa.gov/index.html>

NMFS <http://bbp.noaa.gov/>

NMFS <http://bbp.noaa.gov/fish/leas.html>

NMFS <http://grail.noaa.gov/diditbbi/HTML/VLBI.html>

NMFS <http://reaserwer.noaa.gov/>

NMFS <http://url.url.opb.noaa.gov/>

NMFS <http://www.iwr.noaa.gov/os/>

NMFS <http://www.noaa.gov/os/text/rsd-O.html>

NMFS <http://www.ceoh.noaa.gov/os/text/mod.html>

NMFS <http://www.csc.noaa.gov/>

NMFS <http://www.grdl.noaa.gov/>

[illegible]

[illegible][illegible]

OAR <http://www.pmel.noaa.gov/vents/cont/data.html>
 OAR <http://www.pmel.noaa.gov/vents/home.html>
 OAR <http://www.sclblrdoc.gov/>
 OAR <http://www.soest.hawaii.edu/HURL/hurl.html>
 OAR <http://www.ucc.uconn.edu/~uconn/ucwscd/>
 OAR <http://www.uconn.edu/ypskd/s1/jmr/nrswcm.html>
 OAR <http://www.wcnurc.alaska.edu:8000/>
 PTO: <http://www.uspto.gov>
 TIA: <http://www.ta.doc.gov/tahome/ta.htm>
<http://www.ta.doc.gov/tahome/otp.htm>
<http://www.ta.doc.gov/tahome/pacpage.htm>
<http://www.ta.doc.gov/tahome/nmi.htm>
<http://www.ta.doc.gov/tahome/pip.htm>
<http://www.ta.doc.gov/tahome/pip.htm>
<http://www.ta.doc.gov/tahome/pip.htm>
 NTIS: <http://www.ta.doc.gov/tahome/pip.htm>
 NIST: <http://www.FedWorld.gov>
 NTIA: <http://www.nist.gov>
<http://www.NTIA.DOC.Gov>

QUESTION:

Please provide a breakdown of all foreign and domestic travel expenditures by agency within the Department of Commerce agencies for fiscal 1995 and estimated for 1996 and 1997.

ANSWER:

(See attachment 2)

QUESTION:

Provide a list of all advisory committees and panels within the Department of Commerce, the associated costs, and the agency funding such costs.

ANSWER:

Following is a list of all advisory committees that come under the purview of the Federal Advisory Committee Act. These committees are centrally tracked by the Department. They are listed by the agency responsible for their funding.

ADVISORY COMMITTEES

Bureau of the Census

EX 95

Census Advisory Committee of Professional Associations
 Census Advisory Committee on Agriculture Statistics
 Census Advisory Committee on the African American Population
 Census Advisory Committee on the American Indian and Alaska Native Population
 Census Advisory Committee on the Asian and Pacific Islander Populations
 Census Advisory Committee on the Hispanic Population
 2000 Census Advisory Committee
 International Trade Administration
 Committee of Chairs of Industry Advisory Committees for Trade Policy Matters (TPM)
 Industry Sector Advisory Committee (ISAC) on Aerospace Equipment for TPM
 ISAC on Building Products and Other Materials for TPM
 ISAC on Capital Goods for TPM
 ISAC on Chemicals and Allied Products for TPM
 ISAC on Consumer Goods for TPM
 ISAC on Electrical Instrumentation for TPM
 ISAC on Energy for TPM
 ISAC on Ferrous Ores and Metals for TPM
 ISAC on Footwear, Leather, and Leather Products for TPM
 ISAC on Lumber and Wood Products for TPM
 ISAC on Nonferrous Ores and Metals for TPM
 ISAC on Paper and Paper Products for TPM
 ISAC on Services for TPM
 ISAC on Small and Minority Business for TPM
 ISAC on Textiles and Apparel for TPM
 ISAC on Transportation, Construction, and Agricultural Equipment for TPM
 ISAC on Wholesaling and Retailing for TPM
 Industry Functional Advisory Committee (IFAC) on Customs Matters for TPM
 IFAC on Intellectual Property Rights for TPM
 IFAC on Standards for TPM
 Industry Policy Advisory Committee for TPM
 Engineering and Technological Trade Advisory Committee
 Exporters' Textile Advisory Committee
 President's Export Council
 U.S. Automotive Parts Advisory Committee

\$ 122,372
 52,322
 42,380
 44,666
 45,538
 48,476
 72,016
 8,390
 20,490
 24,016
 20,470
 16,535
 20,980
 28,542
 35,658
 13,560
 20,980
 21,231
 11,775
 24,775
 14,415
 36,775
 11,556
 10,640
 12,095
 11,805
 12,135
 14,112
 20,795
 76,001
 2,500
 213,066
 19,060

WeatherNet: WeatherSites

Welcome to WeatherNet's famous **WeatherSites** page. This page provides access to over 380 North American weather sites. Look for major improvements to this page in the coming weeks, including better organization, the addition of a search engine, and a "What's New" section.



[Accu-Weather Homepage](#)
[Advanced Designs Corporation](#)
[Aerospace & Marine International](#) **New!**
[Affordable Weather Advisor](#)
[Agricultural Weather Information Service \(AWIS\)](#)
[AgriWeather Homepage](#)
[Alden Electronics Home Page](#)
[Alert Meteorological Research Teams](#)
[American Meteorological Society](#)
[American Weather Concepts](#)
[American Weather Office](#) **New!**
[Atlantic Canada Weather Watchers](#) **New!**
[Atmospheric Profiler Research Facility](#)
[Automated Weather Source Homepage](#)
[BBsea Ltd. Homepage](#)
[Bermuda Bio Station for Research Satellite Imagery](#)
[Bob Hart's Offshore and User Observation Home Page](#)
[Cable News Network \(CNN\) Weather Page](#)
[California Regional Weather Server](#)
[CAPS -- Center for the Analysis and Prediction of Storms](#)
[CAPS -- Tornado Alley Chronicles](#)
[Carolina Area Storm Investigators](#) **New!**
[CBF-AM Radio \(Montréal, Québec\) Weather](#)
[Center for Ocean-Land-Atmosphere Studies](#)
[Central Connecticut State University Weather Center](#)
[CFRN-TV \(Edmonton, AB\) TV Weather Report](#)
[College of DuPage NEXLAB Homepage \(IL\)](#)
[Colorado State University - Atmospheric Science Dept](#)
[Compu-Weather, Inc](#)
[Cooperative Institute for Meteorological Satellite Studies](#)
[Cooperative Institute for Research in the Atmosphere](#)
[Dakota State University Weather](#)
[Dalhousie University Atmospheric Science \(NS\)](#)
[EarthSat Corporation](#)
[EarthWatch Communications](#)
[Earthweek](#)
[Environment Canada - Maritimes](#)

[Environment Canada - Pacific & Yukon Region](#)
[Environment Canada - Toronto](#)
[Environmental Research Services](#) **New!**
[Fairweather Forecasting](#)
[FEMA Tropical Weather Watch](#)
[Fleet Numerical Meteorology and Oceanography Center](#)
[FleetWeather, Inc.](#)
[Florida EXPLORES! Home Page](#)
[Florida State Meteorology](#)
[Fox Weather Services](#)
[Freese-Notis Weather](#)
[GOES Satellite Homepage](#)
[Global Atmospheric, Inc.](#)
[Harris-Mann Weather](#)
[High Plains Regional Climate Center](#)
[Hurricane Hunters Home Page](#) **New!**
[Integrated Earth Information Server at NSF](#)
[Interactive Marine Observations](#)
[International Weather Satellite Imagery Center](#)
[International Weather Watchers](#)
[Iowa State University Atmospheric Sciences](#)
[Joint Agricultural Weather Facility](#)
[KAUZ \(Wichita Falls, TX\) 6 News First Weather](#)
[Kavouras, Inc.](#)
[KCNC-TV \(Denver, CO\) StormCenter 4](#)
[KCRG-TV \(Cedar Rapids, IA\) First Alert Storm Team](#)
[KFOR-TV \(Oklahoma City, OK\) 4-Warn Storm Team](#)
[KGAN-TV \(Cedar Rapids, IA\) Weather](#)
[KGTU-TV \(San Diego, CA\) Captain Mike's Weather](#)
[KHOU-TV \(Houston, TX\) Dr. Neil Frank's Forecast](#)
[KHSL-TV \(Chico/Redding, CA\) Anthony's Weather Page](#)
[Kids as Global Scientists](#)
[KIVI-TV \(Boise, ID\) Weather](#)
[KJRH-TV \(Tulsa, OK\) Storm Team Weather](#)
[KLAS-TV \(Las Vegas, NV\) Weather](#)
[KLTU-TV \(East Texas, TX\) Weather](#) **New!**
[KKTU-TV \(Colorado Springs, CO\) Netline Weather](#)
[KNBC-TV \(Los Angeles, CA\) Weather](#)
[KOCO-TV \(Oklahoma City, OK\) Weather Center](#) **New!**
[KOIN-TV \(Portland, OR\) WeatherCenter 6 Homepage](#)
[KOLO-TV \(Reno, NV\) 5-Day Forecast](#)
[KOMO-TV \(Seattle, WA\) Weather](#)
[KPIX-TV \(San Francisco, CA\) Live Weather Photo](#)
[KSNW-TV \(Wichita, KS\) Virtual Weather Center](#) **New!**
[KSTW-TV \(Seattle, WA\) Channell 11 Weather Center](#)
[KSTW-TV \(Seattle, WA\) WeatherDude](#)
[KTVX-TV \(Salt Lake City, UT\) 4 Utah Weather](#)
[KVOA-TV \(Tucson, AZ\) Eyewitness Weather](#)
[KWTU-TV \(Oklahoma City, OK\) Weather Center](#)
[KXAN-TV \(Austin, TX\) First Warning Weather](#)
[KXAS-TV \(Fort Worth, TX\) Weather](#)
[Louisiana State University Earth Scan Lab](#)
[Long Island Weather Homepage](#)
[Lyndon State College \(VT\)](#)

[Maui Weather Today](#)
[McGill University Weather Homepage](#)
[Meteorology Conference Listings](#)
[Mexico Hydrometeorological Dept](#)
[Michigan State University](#)
[Michigan Technological University Weather](#)
[MicroForecasts Columbia River Gorge \(OR\) Forecast](#)
[Midwest Climate Center](#)
[Millersville University Meteorology](#) **New!**
[MIT Center for Meteorology and Physical Oceanography](#)
[MIT Weather Radar Lab](#)
[Mount Washington Observatory](#)
[NASA Earth System Science Division](#)
[NASA Climate and Radiation Research](#)
[NASA Global Change Master Directory](#)
[NASA Spaceflight Meteorology Group](#)
[National Center for Atmospheric Research](#)
[National Climatic Data Center](#)
[National Hurricane Center](#)
[National Lightning Safety Institute](#)
[National/Naval Ice Center](#)
[National Severe Storms Forecast Center](#)
[National Severe Storms Laboratory](#)
[National Severe Storms Laboratory - Boulder, CO](#)
[National Snow and Ice Data Center](#)
[National Weather Association](#)
[National Weather Service Home Page](#)
[National Weather Service - Arkansas/Red River Forecast Center](#)
[National Weather Service - Brownsville, TX](#) **New!**
[National Weather Service - Burlington, VT](#) **New!**
[National Weather Service - Dodge City, KS](#)
[National Weather Service - El Paso, TX](#)
[National Weather Service - Grand Rapids, MI](#)
[National Weather Service - Green Bay, WI](#)
[National Weather Service - Greenville/Spartanburg, SC](#)
[National Weather Service - Hastings, NE](#)
[National Weather Service - Jackson, MS](#)
[National Weather Service - Kansas City, MO](#)
[National Weather Service - Lincoln, IL](#)
[National Weather Service - Louisville, KY](#)
[National Weather Service - Medford, OR](#) **New!**
[National Weather Service - Memphis, TN](#)
[National Weather Service - Melbourne, FL](#)
[National Weather Service - Middle Atlantic Forecast Center](#)
[National Weather Service - Midland/Odessa, TX](#)
[National Weather Service - Mobile, AL](#) **New!**
[National Weather Service - Newport, NC](#)
[National Weather Service - North Central River Forecast Center](#)
[National Weather Service - Northeast River Fcst Center](#)
[National Weather Service - North Platte, NE](#)
[National Weather Service - Portland, OR](#)
[National Weather Service - Pueblo, CO](#)
[National Weather Service - Rapid City, SD](#)
[National Weather Service - San Diego, CA](#)

[National Weather Service - State College, PA](#)
[National Weather Service - Tampa, FL](#)
[National Weather Service - Wakefield, VA](#)
[National Weather Service - Wichita, KS](#)
[National Weather Service - Wilmington, NC](#)
[National Weather Service - Tallahassee, FL](#)
[National Weather Service - West Gulf River Forecast Center](#)
[National Weather Service Forecast Office - Alaska Region](#)
[National Weather Service Forecast Office - Albany, NY](#)
[National Weather Service Forecast Office - Birmingham, AL](#)
[National Weather Service Forecast Office - Boise, ID](#)
[National Weather Service Forecast Office - Boston, MA](#)
[National Weather Service Forecast Office - Charleston, WV](#)
[National Weather Service Forecast Office - Cheyenne, WY](#)
[National Weather Service Forecast Office - Chicago, IL](#)
[National Weather Service Forecast Office - Cleveland, OH](#)
[National Weather Service Forecast Office - Columbia, SC](#)
[National Weather Service Forecast Office - Detroit, MI](#)
[National Weather Service Forecast Office - Gray, ME](#)
[National Weather Service Forecast Office - Indianapolis, IN](#)
[National Weather Service Forecast Office - Lubbock, TX](#)
[National Weather Service Forecast Office - Los Angeles/Oxnard, CA](#)
[National Weather Service Forecast Office - Minneapolis, MN](#)
[National Weather Service Forecast Office - New York City, NY](#)
[National Weather Service Forecast Office - Norman, OK](#)
[National Weather Service Forecast Office - Philadelphia, PA](#)
[National Weather Service Forecast Office - Phoenix, AZ](#)
[National Weather Service Forecast Office - Raleigh, NC](#)
[National Weather Service Forecast Office - Reno, NV](#)
[National Weather Service Forecast Office - Salt Lake City, UT](#)
[National Weather Service Forecast Office - San Francisco, CA](#)
[National Weather Service Forecast Office - San Juan, PR](#)
[National Weather Service Forecast Office - Seattle, WA](#)
[National Weather Service Forecast Office - Sterling, VA](#)
[National Weather Service Forecast Office - Topeka, KS](#) **New!**
[National Weather Service Forecast Office - Tulsa, OK](#)
[National Weather Service Interactive Weather Info Network](#)
[Naval Postgraduate School Meteorology Homepage](#)
[Navy Research Laboratory - Monterey](#)
[NCAR Information Server](#)
[New England Cable News Weather Center](#)
[New Jersey Online Farmer's Almanac Weather](#)
[NOAA AVHRR Pathfinder Home Page](#)
[NOAA AVHRR Oceans Pathfinder Home Page](#)
[NOAA Atlantic Oceanographic and Meteorological Lab](#)
[NOAA Interactive Climate Data](#)
[NOAA Climate Diagnostics Center](#)
[NOAA Climate Prediction Center](#)
[NOAA Defense Meteorological Satellite Program](#)
[NOAA El Nino Homepage](#)
[NOAA Environmental Technology Lab](#)
[NOAA Forecast Systems Lab](#)
[NOAA Geostationary Satellite Browse Server](#) **New!**
[NOAA Home Page](#)
[NOAA National Data Bouy Center](#)

[NOAA Network Information Center/NWS Forecasts](#)
[NOAA Weather Radio Listings](#)
[NOAA Western Regional Center](#)
[North Carolina State WWW Server](#)
[North Dakota Regional Weather Center](#)
[Northeast Regional Climate Center](#)
[Northern Illinois University Meteorology](#)
[Northern Maine Weather Watch](#)
[Oceanweather Homepage](#)
[Ohio State Weather Server](#)
[Oregon State University Climate/Weather Service](#)
[Pacific Air Force Command Center Weather](#)
[Palm Beach Post Hurricane Guide and News](#)
[PC Weather Products, Inc.](#)
[Penn State Meteorology](#)
[Phillips Laboratory Atmospheric Science Division](#)
[Plainfield, VT Weather Report](#)
[Plymouth State WWW Server \(NH\)](#)
[Portland \(OR\) Schools Meteorological Network](#)
[Portsmouth Weather Records Service](#)
[Potsdam, NY Temperature Plot](#)
[Prodigy Weather Group](#) **Now!**
[Purdue WXP Weather](#)
[Resorts Sports Network Weather Cam](#)
[Roemer Weather Homepage](#)
[Rutgers University Meteorology \(NJ\)](#)
[San Diego BayCam](#)
[San Francisco State Univ. Meteorology](#)
[Scripps Climate Research Division](#)
[SensorMetrics Homepage](#)
[South Dakota School of Mines Weather Server](#)
[South Dakota State University - SD Climate Information](#)
[South Florida Water Management District Weather](#)
[Southern Regional Climate Center](#)
[Southeast Regional Climate Center](#)
[SSEC/University of Wisconsin Weather Information](#)
[Storm Chaser Home Page](#)
[Storm Spotter Glossary](#)
[Striking Images Lightning Photography](#)
[Sunshine Weather Books](#)
[Sun-Sentinel \(S.Florida\) Hurricane News](#)
[SUNY Albany Atmospheric Science Department](#)
[SUNY Brockport Weather Page](#)
[SUNY Oswego Meteorology Homepage](#)
[Texas A&M Weather Data Home Page](#)
[Texas Severe Storm Association](#) **Now!**
[Texas Tech Atmospheric Science Group](#)
[Texas Weather Instruments, Inc](#)
[Boston Meteorologist Todd Gross's Weather/Astronomy Homepage](#)
[Tornado Project Online](#)
[Tropical Cyclone Centre](#)
[UCAR Real-Time Weather Page](#)
[UNIDATA Information Server](#)
[UNIDATA Mcldas Dmonsration Server](#)
[Universal Weather & Aviation, Inc.](#)

[University of Alabama - Huntsville Weather Homepage](#)
[University of Alaska - Fairbanks Satellite Imagery](#)
[University of Alaska - Fairbanks Atmospheric Science](#)
[University of California - Davis Meteorology](#)
[University of California - Los Angeles Atmospheric Science](#)
[University of Hawaii Satellite Oceanography Lab](#)
[University of Hawaii Meteorology Department](#)
[University of Hawaii Storm Tracks](#)
[University of Illinois CoVis Geosciences Server](#)
[University of Illinois Daily Planet](#)
[University of Kansas Atmospheric Science](#)
[University of Kentucky Agricultural Weather Center](#)
[University of Maryland Meteorology \(Earthcast\)](#)
[University of Michigan Weather Underground Homepage](#)
[University of Miami Sea-Surface Temperature Maps](#)
[University of Missouri Atmospheric Science Homepage](#)
[University of North Carolina - Asheville Weather Web](#)
[University of North Carolina - Charlotte Weather Server](#)
[University of Oklahoma - College of Geosciences **New!**](#)
[University of Oregon Current Weather Page](#)
[Universite du Quebec a Montreal Atmospheric Science](#)
[University of Rhode Island Sea-Surface Temperature Archive](#)
[University of Utah Weather Homepage](#)
[University of Washington Weather Page](#)
[University of Wisconsin Forecast Model Output](#)
[University of Wisconsin - Madison Tropical Cyclone Page](#)
[University of Wisconsin - Milwaukee Homepage](#)
[University of Wyoming Weather Web](#)
[USA Hourly Weather Statistics](#)
[USA Today Weather](#)
[USAF 45th Weather Squadron](#)
[USDA/CIESIN Global Environmental Change Data Assessment and Integration Project](#)
[Utah Climate Center](#)
[Valparaiso University \(IN\) Meteorology Web Page](#)
[VAS-DAS Satellite Imagery](#)
[WAAY-TV \(Huntsville, AL\) Weather Center](#)
[WABG-TV \(Greenville, MS\) NewsWatch 6 Weather Center](#)
[WAFF-TV \(Huntsville, AL\) Weather Center](#)
[WAGA-TV \(Atlanta, GA\) Weather Center](#)
[WBRC-TV \(Birmingham, AL\) Doppler 6 Weather Center](#)
[WBOC-TV \(Salisbury, MD\) Weather Center](#)
[WBTW-TV \(Charlotte, NC\) Internet Weather Team](#)
[WCBS-AM-Radio \(New York City, NY\) Newsradio-88 Weather](#)
[WCFT-TV \(Birmingham, AL\) Weather **New!**](#)
[WCIV-TV \(Charleston, SC\) Accu-Weather Forecast](#)
[WCVB-TV \(Boston, MA\) WeatherCenter 5](#)
[WDIV-TV \(Detroit, MI\) WeatherWatch](#)
[WeatherBank, Inc.](#)
[The Weather Channel](#)
[Weather FAQ - Hypertext version](#)
[WeatherGraphix Homepage](#)
[WeatherLabs, Inc.](#)
[The Weather Network \(Canada\)](#)
[The Weather Office \(Environment Canada\) **New!**](#)
[WeatherNews International](#)

[WeatherNode Server](#)
[Weather Research Associates](#)
[Weather Research Center](#)
[Weather Routing, Inc.](#) **New!**
[WeatherSense](#)
[Weather Services Corporation](#)
[Weather Science Hotlist](#)
[Weather Scratch Meteorological Services](#)
[Weather Watchers Online \(WWOL\)](#)
[WeatherWatch Magazine/WeatherStore Online!](#)
[WeatherWeek](#)
[WebWeather](#)
[Western Connecticut State University Weather Center](#)
[Western Regional Climate Center](#)
[WFRV-TV \(Green Bay, WI\) EarthWatch Center5](#)
[WFSB-TV \(Hartford, CT\) Online Weather](#)
[WGNX-TV \(Atlanta, GA\) Weather](#) **New!**
[WHDH-TV \(Boston, MA\) Weather](#)
[WHNT-TV \(Huntsville, AL\) Weather Center 19 Online](#)
[WHNT-TV \(Huntsville, AL\) Dan's Wild Wild Weather Page](#)
[Widespread Weather Services](#)
[Wind Hot Line's Real-Time Wind Graphs](#)
[WISC-TV \(Madison, WI\) Weather](#)
[WJW-TV \(Cleveland, OH\) Weather](#)
[WMC-TV \(Memphis, TN\) Pinpoint Weather](#)
[WNEP-TV \(Scranton, PA\) Weather Center](#)
[Women in Weather](#)
[World Meteorological Organization](#)
[World-Wide Web Virtual Library: Meteorology](#)
[WOWK-TV \(Huntington, WV\) Storm Tracker 13](#)
[WRAL-TV \(Raleigh, NC\) TV5 Weather](#)
[WRC-TV \(Washington, DC\) WeatherNet4](#)
[WRTV-TV \(Indianapolis, IN\) Storm Center 6](#)
[WSAV-TV \(Savannah, GA\) Skywatch Web Weather](#)
[WSB-AM Radio \(Atlanta, GA\) Weather](#)
[WSAZ-TV \(Huntington, WV\) PinPoint Forecast](#)
[WSI Corporation Homepage](#)
[WSI IntelliCast Homepage](#)
[WSOC-TV \(Charlotte, NC\) Weather](#)
[WTNH-TV \(New Haven, CT\) Storm Team 8](#)
[WTOG-TV \(Savannah, GA\) Weather Home](#)
[WTVT-TV \(Tampa Bay, FL\) Online Weather](#)
[WVEC-TV \(Norfolk, VA\) Weather](#)
[WVNY-TV \(Burlington, VT\) TV 22 Weather Center](#)
[WWBT-TV \(Richmond, VA\) Radar Plus Weather](#)
[WXIN-TV \(Indianapolis, IN\) Fox Weather](#)
[Zephyrus Electronics](#)



[American Meteorological Society Gopher](#)
[Blue Skies Gopher \(U. of Michigan\)](#)
[Canadian Meteorological Centre](#)

[Colorado Weather Underground Gopher](#)
[Falmouth, MA Monthly Climate Report \(Woods Hole\)](#)
[Florida State Univ Gopher](#)
[GOES Pathfinder \(SSEC\)](#)
[International Weather Watchers](#)
[Lyndon State College Weather Gopher](#)
[Millersville University Weather Center](#)
[National Weather Service](#)
[NOAA Environmental Information Gopher](#)
[NOAA National Geophysical Data Center](#)
[North Carolina State Weather Gopher](#)
[NWS Communications Gopher](#)
[Ohio State Weather Server](#)
[Purdue WXP Gopher](#)
[Southern Regional Climate Center](#)
[SSEC/Experimental NONAME Server](#)
[SSEC/University of Wisconsin-Madison](#)
[SUNY Albany Weather Gopher](#)
[SUNY Brockport Gopher](#)
[UCAR/NCAR Gopher](#)
[Unidata Gopher](#)
[University of Hawaii Weather Gopher](#)
[University of Illinois Weather Machine](#)
[University of Kentucky Weather Gopher](#)
[University of Michigan Weather Gopher](#)
[University of Minnesota Weather Gopher](#)
[University of Nebraska-Lincoln Weather Gopher](#)
[University of North Carolina Charlotte WX Gopher](#)
[University of Washington Weather Gopher](#)
[University of Wyoming Weather Gopher](#)
[Woods Hole Weather Tower](#)
[Woods Hole Weather Tower Summary](#)

Telnet

[Colorado Weather Underground](#)
[Contel DUAT System \(restricted access\)](#)
[Cornell University Weather & Climate Data \(login: guest\)](#)
[NCDC Hurricane System \(login: storm; pwd: research\)](#)
[NOAA Master Directory](#)
[Southern Regional Climate Center](#)
[UCAR Weather Data Server \(login: weather; pwd: orknot\)](#)
[University of Alabama Weather Underground](#)
[University of Michigan Weather Underground](#)
[University of North Carolina/Asheville Weather Service \(login: uncawx\)](#)
[University of Wisconsin - Superior Instant Weather Report](#)
[Western Regional Climate Center \(login: weather; pwd: weather\)](#)

FTP

[Canadian Meteorological Centre](#)

[Maui Gateway Weather FTP Archive](#)
[NASA Weather Satellite Archive \(Explorer\)](#)
[National Climatic Data Center](#)
[National Hurricane Center FTP Archive](#)
[Northeast Weather \(ne.weather\) Newsgroup Archives](#)
[NWS AVHRR Snow Cover Maps](#)
[Oregon State University Weather Data](#)
[Purdue WXP FTP Archive](#)
[SSEC/U.of Wisconsin FTP Archive](#)
[University of Colorado Weather Images](#)
[University of Hawaii Sat Imagery](#)
[University of Illinois Weather Machine FTP Archive](#)
[VMD Mirror Sites - THINK](#)
[VMD Mirror Sites - UMD \(wx\)](#)
[VMD Mirror Sites - NRAO](#)



[Alt.talk.weather](#)
[Bit.listserv.wx-chase](#)
[Bit.listserv.wx-talk](#)
[Clari.news.weather](#)
[Ne.weather](#)
[NCAR.weather](#)
[Sci.geo.meteorology](#)





NATIONAL WEATHER SERVICE

SAN FRANCISCO BAY AREA



[Quick Reference Weather](#) | [User's Guide](#) | [Text Only](#)
[Homepage](#)

NEW STUFF	WINTER WEATHER	CLIMATE DATA
CURRENT CONDITIONS	AVIATION WEATHER	PROJECTS & RESEARCH
FORECASTS	MARINE WEATHER	SKYWARN PAGE
RADAR & LIGHTNING	SATELLITE IMAGERY	NATURAL HAZARDS
WEATHER 101	WEATHER MAPS	WEATHER LINKS
FAQ	RIVER & RAINFALL	COMMENTS

NOTES AND ACKNOWLEDGEMENTS

- YOU ARE VISITOR **650182** SINCE JANUARY 1, 1996! THANKS FOR STOPPING BY!
- These pages are organized in a series of sub-pages. The most commonly linked data will be the Quick Reference Weather section at the bottom of this page. You may want to bookmark your favorite sub-pages (i.e., Winter, Aviation, Marine).
- SPECIAL THANKS TO MONTEREY BAY INTERNET **MBAY.NET** FOR PROVIDING THIS SERVER!
- See [FAQ PAGE](#) for hints on how to best view these pages.
- **DISCLAIMER** No link to, or mention of, a particular site or vendor constitutes an endorsement of said products or vendor by the National Weather Service. Click [here](#) to see a list of NWS who have WWW homepages on the Internet:
- These pages developed and maintained by [Jan Null](#), NWS Lead Forecaster.

QUICK REFERENCE WEATHER

CURRENT CONDITIONS:

- Hourly Summary for Northern California
 - Hourly ALERT Rainfall
- [...more CURRENT WEATHER]

FORECASTS:

- [Bay Area NOWCAST](#)
- [Northern/Central Calif. ZONE Forecasts](#)
- [Northern/Central Calif. State & 3-5 Day Forecasts](#)
 - [Technical Forecast Discussion](#)
- [Coastal & San Francisco Bay MARINE Forecasts](#)
- [\[...more FORECASTS\]](#)

SATELLITE:

- [GOES 9 - VISIBLE | Enhanced IR | WATER VAPOR](#)
 - [2 km Experimental Fog/Stratus Imagery](#)
 - [Infrared Movie \(MPEG\)](#)
- [\[...more SATELLITE PICTURES\]](#)

RADAR:

- [Bay Area](#)
- [Northern/Central CA](#)
- [ANIMATED RADAR Northwest US, Southwest US](#)
- [\[...more RADAR DATA\]](#)

HOME | NEW STUFF | CURRENT | FORECAST | RADAR | SATELLITE | WEATHER 101 | CLIMATE
 | PROJECTS
 AVIATION | WINTER | MARINE | MAPS | HAZARDS | RAINFALL | FAQ | SKYWARN | LINKS





RADAR & LIGHTNING PAGE

NATIONAL WEATHER SERVICE
SAN FRANCISCO BAY AREA



(Map of Radar Locations)

- o [Latest SFO NEXRAD - WSI, Wx Channel](#)
- o [Latest EKA NEXRAD](#)
- o [Latest Fresno NEXRAD](#)
- o [Latest Sacramento NEXRAD](#)
- o [Latest Medford, OR NEXRAD](#)
- o [Latest Reno NEXRAD](#)
- o [Regional Summary](#) Northern/Central CA.
- o [Regional Summary](#) Southern/Central CA.
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National Weather Service
State College, Pennsylvania
227 West Beaver Avenue
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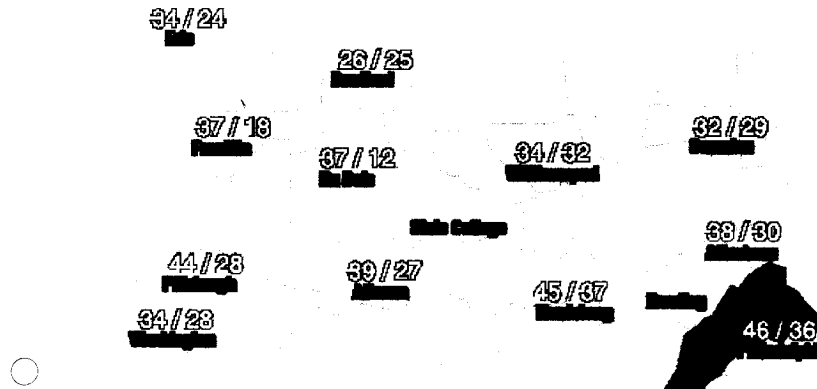
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Current Time: 06:11 GMT

Severe Weather Statements

Frost Statement	Bucks, Chester, Montgomery counties
-----------------	-------------------------------------

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Regional Radar	Regional Summary	24-Hour Precip Totals
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Complete Station List

Last Product Time	Feed	Origin	Products	Bytes	Average Latency (Secs)	
06:11:50 04/21/1997	IDS	haze.alDEN.com	266	105872	0.00	
06:11:47 04/21/1997	DDS	haze.alDEN.com	318	234365	0.00	
06:11:50 04/21/1997	PPS	haze.alDEN.com	56	123217	0.00	
05:58:04 04/21/1997	IDS	haze.alDEN.com	710	249709	0.00	
05:58:08 04/21/1997	DDS	haze.alDEN.com	1250	800906	0.00	
05:58:12 04/21/1997	PPS	haze.alDEN.com	259	396490	0.00	
04:57:07 04/21/1997	IDS	haze.alDEN.com	757	404561	0.00	
04:58:23 04/21/1997	DDS	haze.alDEN.com	1353	893586	0.00	
04:58:25 04/21/1997	PPS	haze.alDEN.com	194	345881	0.00	
03:58:16 04/21/1997	IDS	haze.alDEN.com	787	318106	6.96	
03:58:21 04/21/1997	DDS	haze.alDEN.com	1490	1840083	5.83	
03:58:25 04/21/1997	PPS	haze.alDEN.com	255	431309	5.38	
02:57:59 04/21/1997	IDS	haze.alDEN.com	838	338925	0.00	
02:58:06 04/21/1997	DDS	haze.alDEN.com	1094	669316	0.00	
02:57:43 04/21/1997	PPS	haze.alDEN.com	368	609261	0.00	
01:58:05 04/21/1997	IDS	haze.alDEN.com	1330	564145	0.00	
01:58:14 04/21/1997	DDS	haze.alDEN.com	1299	925859	0.00	
01:58:03 04/21/1997	PPS	haze.alDEN.com	333	507339	0.00	
00:57:50 04/21/1997	IDS	haze.alDEN.com	1556	764562	0.00	

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00:58:26 04/21/1997	PPS	haze.alDEN.com	361	547898	0.00	
23:57:43 04/20/1997	IDS	haze.alDEN.com	627	223904	0.00	
23:58:04 04/20/1997	DDS	haze.alDEN.com	1273	875473	0.00	
23:58:24 04/20/1997	PPS	haze.alDEN.com	299	438723	0.00	
22:57:00 04/20/1997	IDS	haze.alDEN.com	720	282749	0.00	
22:57:05 04/20/1997	DDS	haze.alDEN.com	1090	671217	0.00	
Full		DDS	IDS		PPS	



National Weather Service

Kansas City/Pleasant Hill Missouri

A picture of the Pleasant Hill Office

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(Last updated 4/14/97)

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Pleasant Hill, Missouri 64080

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National Weather Service Forecast Office Washington/Baltimore



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T o p S i t e T o p 25 R e q u e

Champaign, Illinois



448 PM CDT SUNDAY APRIL 20 1997

.Tonight...periods of showers with a few thunderstorms. Low in the lower or middle 40s. Light winds.

.Monday...considerable cloudiness. High around 60. Northeast winds 10 to 15 mph.

.Monday night...cloudy. A 50 percent chance of showers late. Low in the middle 40s.

.Tuesday...cloudy. A 50 percent chance of showers. Cool. High in the upper 50s.



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More Champaign weather!!!



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
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- Climate Visualization (CLIMVIS)** 
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- Recent Global Data for Over 8000 Stations
- World War II Era Data
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U.S. Monthly Precipitation for Cooperative & NWS Sites
Climate Division: Temperature, Precipitation, Drought Database
Global Historical Climatology Network (Temperature, Precipitation, Pressure)
United States Historical Climatology Network (Temperature, Precipitation)

Other Types of Data


Coastal Subset of the Comprehensive Ocean-Atmosphere Data Set (COADS)
Nineteenth Century U.S. Climate Data Set
GLOBE--Student Data
Special Sensor Microwave/Imager Dataset (SSM/I)
GFDL Global Climate Model (GCM) [100 year run]
GFDL Global Climate Model (GCM) [1000 year run]
Supplemental Hourly Precipitation For Selected NWS ASOS Sites 



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This service averages over 250,000 visits per day...and over 450,000 during major weather events

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FYI -- This service is under construction.

Not all features and data products are available. Improvements may be made to this service during spring 1997 if staffing is available.

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This server is not staffed or fully supported at this time.....requests and suggestions will be worked on when possible..

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"Access to all available warnings for the United States from the National Weather Service.

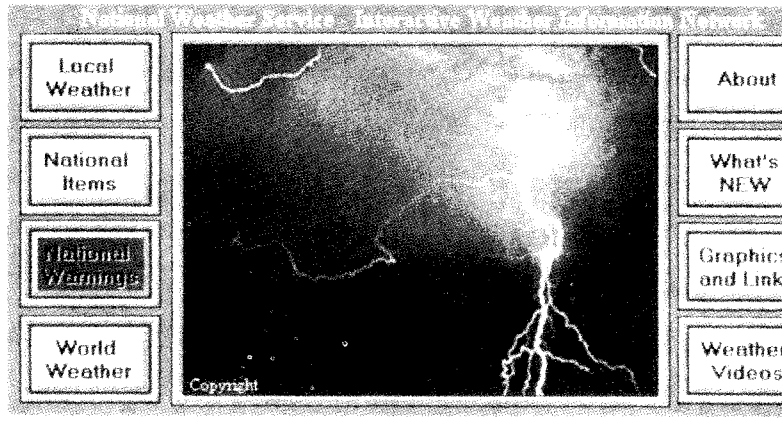
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*** * * * Recent Four Star Rating**

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"OFFICIAL FORECAST The National Weather Service site lists all the areas across the country that are currently under watch or warning for thunderstorms, tornadoes, hurricanes, flash flooding, and other climatic episodes" - Newsweek December 11,1995

Active Warnings: Flash Flood, Flood, Hurricane/Tropical Storm, Special Marine, Non Precipitation, Severe Thunderstorm



Active Warnings:

Flash Flood

- [Texas](#)
- [Washington](#)

Flood

- [Idaho](#)
- [Massachusetts](#)
- [Montana](#)
- [Washington](#)

Hurricane/Tropical Storm

- [United States](#)

Special Marine

- [Puerto Rico](#)

Non Precipitation

- [California](#)

- [Iowa](#)
- [Idaho](#)
- [Illinois](#)
- [Montana](#)
- [Nevada](#)
- [Wyoming](#)

Severe Thunderstorm

- [Arkansas](#)
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REPORT TO THE CONGRESS**LEASE BACK OF THE FAIRWEATHER
FROM A PRIVATE SECTOR CONTRACTOR****I. Scope of Report**

This report, prepared by the National Oceanic and Atmospheric Administration's (NOAA) National Ocean Service (NOS), responds to a request in House Report 104-676 for H.R. 3814. The request is contained in the section entitled *Fleet Modernization, Shipbuilding and Conversion* for the National Oceanic and Atmospheric Administration. The relevant language states:

The Committee understands that hydrographic and oceanographic data collection activities present the greatest opportunity for private sector and academic involvement. The Committee is aware of NOAA's recent effort to obtain information from the private sector on the cost of rebuilding and operating the FAIRWEATHER for hydrographic use. If NOAA determines that rebuilding the FAIRWEATHER would be a practical and cost effective method of meeting its needs, then the Committee encourages NOAA to move forward to transfer the vessel to the private sector and enter into a charter agreement for the vessel's service, and to report to the Committee on its intentions with respect to this proposal by February 1, 1997.

This report responds to issues of meeting the hydrographic data acquisition needs to fulfill the mapping and charting mission of the NOS. Specifically, it responds to whether or not the proposal to lease back the FAIRWEATHER is a "practical and cost effective method" to achieve part of the data acquisition needs of the NOS.

II. History and Current Status

During FY 1996, a private sector firm expressed interest in refurbishing the FAIRWEATHER, a NOAA hydrographic ship that was laid up in 1988 due to a lack of operating funds. The FAIRWEATHER remains in good condition. The FAIRWEATHER was constructed in the 1960s and is a sister ship to the RAINIER which continues to conduct the majority of NOAA's hydrographic data collection in Alaska. In February 1996, NOAA published a notice in the Commerce Business Daily requesting industry comments on a potential ownership transfer and charter-back arrangement for the FAIRWEATHER. NOAA received and reviewed comments from eight companies. Due to a confidentiality agreement regarding proprietary information, specific details of the comments are not contained in this report. A summary of the comments is attached.

III. Hydrographic Surveying Priorities

NOAA, in cooperation and consultation with the maritime industry, the U.S. Navy, and the U.S. Coast Guard, has created and is implementing a Nautical Charting Plan prioritizing hydrographic surveying areas to best support maritime commerce with available resources. The 1994 plan identified about 43,000 square nautical miles that are in critical need of new survey data. Criteria for establishing critical areas included quality of existing data for major port approaches and coastal sea routes, tonnage and value of goods, hazardous nature of cargo, total vessel traffic, major ports of call and operating areas for the cruise line industry, and areas of frequent and critical changes due to natural processes. Using these criteria, Alaskan waters comprise 24,000 square nautical miles, or more than half, of the critical survey backlog.

NOAA currently operates three hydrographic survey vessels, the RAINIER, dedicated almost solely to Alaska, and the RUDE and WHITING, which operate along the Atlantic and Gulf of Mexico coasts. These three vessels, whose capital costs have already been amortized, are very cost effective platforms for reducing the critical area backlog. NOAA has utilized part of recent increases in appropriations to modernize NOAA's data processing capability. This is to ensure that the critical area backlogs will not be replaced by a backlog of unprocessed data as the rate of data acquisition increases due to advances in technology and use of contract surveys. NOAA also has initiated a program of contracting with the private sector for specific spot and locality surveys. NOAA will continue to reduce its critical areas in accordance with its plan as resources allow.

IV. Practicality and Cost Effectiveness

Specific Applications for the FAIRWEATHER

NOAA has recently begun using spot and locality contracts--annual contracts for the survey of limited, specified areas--to reduce the backlog of requirements in the 48 contiguous United States - specifically excluding Alaska. With existing funding, NOAA anticipates contracting for about \$8.5 million in such services in FY 1997 and early FY 1998. Because of the availability of such services in the contiguous United States and opportunities for those providers to find other work when not under contract, NOAA believes this will prove to be a flexible and cost effective approach to augment the efforts of the agency's two remaining hydrographic vessels operating along the coasts of the contiguous United States.

Since about half of the area of backlogged, critical areas are in Alaska, NOAA would intend to assign the FAIRWEATHER to work in Alaskan waters. At present funding levels for operations, and with maintenance and required improvements, NOAA's existing "Alaskan" hydrographic vessel, the RAINIER, will require more

than 30 years to eliminate this backlog. NOAA estimates that the addition of the FAIRWEATHER, or a similar vessel, to this effort would reduce the number of years by about half, to between 13 and 16 years. Given the remoteness and lack of local private surveying capability in Alaska, NOAA believes a long-term contract offers significant advantages for reducing the backlog in that state.

Factors Supporting a Long Term Contract

The future of the NOAA vessels supporting hydrographic surveys is uncertain. The mapping and charting program relies heavily on these ships. NOAA is vitally concerned that the charting program not be compromised by this uncertainty. The program must remain capable of achieving its mandated mission to promote safe, efficient marine navigation and commerce and protecting the marine environment by providing mariners with modern navigation tools and data. A long-term contract for a vessel can offer the charting program stable access to a capable ship necessary to conduct long term research for testing and applying new technologies. Such an arrangement would also allow NOAA to maintain Federal and international leadership in hydrographic surveying, to set standards and procedures, and to limit the liability for spot and locality contractors. These functions, and the maintenance of agency expertise necessary to carry them out, can only be achieved through continued access to vessels in a fully operational mode. Long term contracts will also provide the flexibility to respond to unforeseeable needs and national emergencies. For example, the NOAA hydrographic vessel, RUDE, responded to the crash of TWA Flight 800 and located the wreckage in July 1996.

Increased contracting is a priority of both the Congress and the Administration, and a long-term contract fulfills the congressional and administration goals to increase partnerships and contracting with the private sector. The use of contracts also has been recommended in various reports by the Marine Board of the National Academy of Sciences and by the National Academy of Public Administration. NOAA's mapping and charting program is committed to the increased use of contracting. In the early 1990s NOAA voluntarily laid up two of its five remaining hydrographic ships to make resources available to initiate contracting. However, NOAA believes that an incremental and orderly transition to contracting is required to maintain the ability to achieve its mission.

The FAIRWEATHER or a Different Ship?

Instead of refurbishing the FAIRWEATHER, one company recommended that it could instead purchase and refurbish a newer offshore oil supply boat, if available. Although the FAIRWEATHER is an older vessel, the proven capability in remote and autonomous operations of its sister ship the RAINIER, offers a high degree of probability that a refurbished FAIRWEATHER would perform as

required in Alaskan waters. A converted offshore supply boat does not bring with it this degree of confidence for successful performance. However, given the informal nature of NOAA's initial inquiry and the possibility that conversion and operation of a different vessel could be more cost effective, if NOAA decides to solicit formal requests for proposals, NOAA will not foreclose options for utilizing vessels other than the FAIRWEATHER.

Cost Effectiveness

Preliminary data, including the results of NOAA's first major spot and locality contract and the comments received on the FAIRWEATHER, indicate that these contracts and future long-term contracts are, or will be, more expensive than utilizing the three current NOAA ships. This is due to the contractor's need to amortize its capital investment over the life-time of the contract. Based on a comparison of the current costs of operating the RAINIER with the estimated costs contained in the responses to the Request for Information, NOAA concludes that the annual contracting costs for the FAIRWEATHER could be up to 30 percent higher than its sister ship, the RAINIER. For this reason, entering into a lease for the FAIRWEATHER would not be cost-effective, if that lease were in exchange for the early retirement of one of NOAA's three remaining active hydrographic ships. As NOAA's remaining ships approach the end of their useful lives (beginning around 2005), it is highly likely that long-term contracting for vessels will prove to be a practical and cost-efficient method to replace that capability. The increased knowledge required to conduct more accurate cost comparisons will come with more contracting experience.

Timely Completion of Critical Survey Areas

The Congress has indicated that in addition to cost effectiveness, it is interested in reducing the time it will take to survey critical areas. Congress specifically stated this intent when it increased funding for mapping and charting for both FY 1996 and FY 1997. The method of surveying (in-house, spot contracts, or long-term vessel leases) will only marginally affect the time required to eliminate the backlog. Reducing the amount of time to complete the survey backlog is a function of resource availability.

Funding

As noted above, NOAA estimates that the cost of using the FAIRWEATHER could be up to 30 percent higher than the RAINIER and would thus not be cost effective if existing funds were reallocated to such a contract. NOAA would not support the early retirement of any of its three remaining hydrographic vessels to make funds available. This approach would result in a net decrease in data acquired, and would disrupt and delay ongoing data acquisition efforts and commitments. Similarly, NOAA would

not support eliminating or reducing its commitment to spot and locality contracting in critical areas of the contiguous United States. NOAA will delay consideration of the use of a long-term contract until it prepares for the retirement of one of its remaining ships or until additional resources are made available.

Legislation Required

NOAA estimates that a refurbished FAIRWEATHER could provide service for about 15 years. Current law allows for contracts of no more than 7 years. If a private firm is required to recoup costs of refurbishing and equipping the FAIRWEATHER in 7 years, annual contract costs to the Government may be prohibitive. To spread the start-up costs over time, legislation permitting a 10 to 15 year agreement was recommended by several private sector respondents.

V. Conclusion

In light of present circumstances, and subject to certain conditions outlined in this report, NOAA concludes that turning the FAIRWEATHER over to the private sector for refurbishment and then contracting for its services could provide a practical and cost effective method to employ new resources to help reduce the backlog of hydrographic data acquisition needs. NOAA also concludes that contracting for a non-NOAA vessel could serve the same purposes.

NOAA concludes that such a contracting arrangement would implement congressional and administration policies to reinvent the delivery of Government services by utilizing the private sector to support the Federal missions of promoting safe and efficient international and interstate marine commerce and protecting the marine environment. For reasons expressed in this report, however, NOAA concludes that such contracts would not be practical or cost effective if the early retirement of existing agency capabilities or reduction in other contractual commitments were required to make resources available to enter into such a contract.

Summary of Industry Comments**Private Sector Charter-Back of the FAIRWEATHER**

- CBD notice published February 1996 sought industry interest in transferring ownership of FAIRWEATHER for overhaul and charter back to NOAA. Firms were offered brief vessel inspection visits and were requested to provide preliminary information regarding:
 - estimated annual charter rates
 - estimated termination liability
 - estimated overhaul duration
 - alternate approaches
- Eight firms responded:
 - Estimated FAIRWEATHER charter rates, excluding mission equipment and survey personnel, varied between \$4.5M and \$8.0M per year, based on differing assumptions of overhaul requirements and operational considerations.
 - Substantial termination liability: up to 100% of annual charter amount.
 - Overhaul duration opinions varied widely based on limited information.
- Five firms suggested alternatives:
 - Several firms suggested longer charter periods for amortization of overhaul costs.
 - Two firms suggested NOAA retain ownership, industry would operate as a Public Vessel to avoid extensive overhaul and Coast Guard certification costs.
 - One firm recommended use of a converted commercial vessel in lieu of FAIRWEATHER. Advantages were projected in ship efficiency from more automated machinery, reduced manning requirements, and lower fuel costs.
 - Alternative annual charter rate estimates ranged from \$3.0M to \$8.5M.
- Formal solicitation necessary for comprehensive cost comparison.



April 21, 1997

Senator Sam Brownback
 United States Congress
 141 Hart Senate Office Building
 Washington, DC 20510

Dear Senator Brownback:

I understand that the Senate governmental affairs subcommittee will be holding a hearing April 24 concerning the NOAA's National Weather Service and its future. In advance of the hearing, I would like to provide some information for you to consider:

- The NWS has done a fine job of providing weather information for the American public for 102 years, since the "Organic Act" of 1895 was passed. The approach of having the NWS be "all things to all people" made sense in the 19th Century.
- However, the job has become far too large for the NWS as it is currently comprised. There is an increasing need for specialized weather information tailored to specific businesses and locations which the NWS is currently unable to provide. The increasing population, "just in time" inventories, new transportation technology and deregulation of the energy industry are just a few of the economic trends which increase the need for specialized weather information.
- Congress has to make a historic choice, for which there are really only two options:
 - 1) Greatly expand the NWS, which would cost the taxpayer literally hundreds of millions of dollars per year to handle the increased workload, or,
 - 2) Cultivate and grow the commercial weather industry and let the NWS concentrate on giving the general public the largest return on its tax investment.

"...when decisions depend on weather."

245 North Waco Street, Suite 310 • Wichita, Kansas 67202
 Phone 316-265-9127 • Fax 316-265-1949

Senator Sam Brownback
United States Congress
Page 2
April 21, 1997

I provided testimony to the House Science Committee on this subject in September 1995 and would be pleased to provide you with a copy. To briefly summarize the testimony:

My proposed NWS mission would be:

- √Data collection and assimilation
- √Numerical modeling of the atmosphere and biosphere
- √Storm warnings for the public (as opposed to specific industries or locations)
- √Forecasting for the public (as opposed to specific industries or locations)

There is no increase in the NWS' budget involved in the above. Atmospheric research is a separate category that deserves a federal role, but I have omitted it from this discussion of day to day meteorology.

- The policy I have outlined is very similar to the official NWS policy since 1990. However, there have been occasional problems with its implementation, which cause difficulties for commercial weather companies. These problems have extended beyond the Weather Service to several Federally funded weather organizations which are not explicitly covered by the policy.
- It is a fact that very few members of the public currently get their weather information directly from the National Weather Service. In Wichita, for example, KSNW, KAKE and KWCH have in-house meteorology staffs. KPTS has an outside weather company. *The Wichita Eagle* uses WeatherData's forecasts. At least eight radio stations have in-house or commercial weather companies providing their forecasts. If Congress adopts my suggestion, the public will not notice a difference.
- If Congress chooses the "grow the commercial weather industry" option, then a firewall must be put between the NWS' role and the role of the commercial sector, probably in the form of amending the Organic Act and extending the "firewall" to all Federally supported operational meteorology.

Senator Sam Brownback
United States Congress
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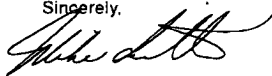
- The NWS does not need to be "privatized" because:
 - ✓ A private weather industry already exists.
 - ✓ U.S. Postal Service is an example of a "privatized" former government function which does not provide the level of service that many require. It would be a mistake if the NWS were privatized. Commercial weather companies would probably go out of business while the quality of specialized services to business would decrease (as the NWS does not have the type of expertise we have).

For your information, there are at least four commercial weather companies based in Kansas. WeatherData, Incorporated employs 38 (up from 11 in 1989) and serves more than 200 clients across North America. The total private sector employment in meteorology in Kansas exceeds the Federal employment in meteorology in Kansas. I would invite you to tour our company whenever you are visiting Wichita.

A competitor of WeatherData's, Dr. Joel Myers of AccuWeather, Inc., will be testifying at the hearing. While Dr. Myers and I don't agree on every detail, we are in total agreement that the commercial industry in the United States is ready, willing and able to handle an increased role in providing weather information to our Nation.

I would be happy to answer any questions you might have. Thank you for considering my views.

Sincerely,



Mike Smith
Certified Consulting Meteorologist
President

MS:cda

Statement of

John D. Bossler, Rear Admiral (Ret.), NOAA

Mr. Chairman and members of the subcommittee:

My name is John D. Bossler, Rear Admiral NOAA (Ret.) and I am a former Director of the Coast & Geodetic Survey, which produces the nautical and aeronautical charts vital to our nation's safe, efficient marine and air transportation. Currently I am the Director of The Center for Mapping at The Ohio State University, Director of the NASA Commercial Space Center in Real-Time Satellite Mapping, and a full professor in the Department of Civil and Environmental Engineering and Geodetic Science of The Ohio State University. I have been president and chairman of numerous professional societies including the American Congress of Surveying and Mapping, National Academy of Science Advisory Committee on Mapping Science, and the University Consortium for Geographic Information Science. It is my pleasure to provide my views on the future of the Commissioned Officer Corps of the National Oceanic and Atmospheric Administration (NOAA).

NOAA CORPS

The Administration has included in its Fiscal Year 1998 budget a "place-maker" of \$14 million to civilianize the NOAA Commissioned Corps. If this proposal is adopted, a uniformed service that plays a key role in our Nation's charting program will be dissolved. This would mark the first elimination of a uniformed service in our nation's history.

A full inquiry into the facts and circumstances surrounding the proposal will reflect that the Administration's intended proposal is simply not supportable. In this respect, three major areas must be carefully considered and fully examined - service history, national interests, to include potential environmental and national security issues, and cost savings.

SERVICE HISTORY

First, background on the history of the Commissioned Corps. The Commissioned Corps has been integral to our nation's development for the past 190 years. The Corps traces its lineage to 1807 when President Thomas Jefferson signed a bill for the "Survey of the Coast." Today's Commissioned Corps is the direct descendant of the commissioned service of the United States Coast and Geodetic Survey (C&GS). It has served the American people on many occasions over the decades, providing valuable scientific and engineering skills to the armed services and the nation.

The Commissioned Corps is unique in that it provides an organization of uniformed professionals to conduct NOAA's operational activities such as managing ships, aircraft, and field assignments with great flexibility and rapid response. The NOAA Corps is the only uniformed service that requires every officer to have a college degree in science or engineering prior to being commissioned. The Commissioned Corps selects its personnel from the strength of the country's premier colleges and universities. NOAA line managers are very supportive of the Commissioned Corps because these officers bring not only key technical skills, but heightened skills in operations, program needs, and management.

The Commissioned Corps is distinctively designed to meet the operational needs of NOAA (ships, aircraft and mobile duty) and to respond quickly to the emergent needs of the nation. Officers enter the Corps with the expectation that they will be separated from their families for long periods of time and will have to move their families often as a part of the Commissioned Corps' rotational assignment system. This continual rotation of officers provides for transfer of ideas throughout NOAA components. It has served NOAA and the nation very well, and should continue to do so into the 21st century. This rotational system, which has many of the positive attributes of the Senior Executive Service, is not limited to the executive level, but spans the entire breadth of NOAA - from an officer in charge of a field hydrographic survey launch, to a commander of a hurricane research aircraft, to the director of the National Geodetic Survey.

The Director of the NOAA Corps, a flag officer, has the capability to immediately direct transfers as required to meet national emergencies. A civilian, or privatized system would be more expensive and not as responsive to emergent requirements. Therefore, with the disestablishment of the Commissioned Corps, the nation would lose an important capability.

The Commissioned Corps' composition of scientists and engineers also provides a cadre of talented and technically competent officers who are intimately familiar with the operational needs of the organization. Many officers pursue advanced degrees, some attaining the doctorate level. Academic advancement is a factor in the Corps' "up or out" promotion system, i.e., as the percentage of officers becomes fewer at each senior grade, only the most talented advance, ensuring the highest quality support.

The Commissioned Corps also provides NOAA with officers who are multifaceted. In this respect, officers typically serve within multiple line components, similar to the Department of Defense's joint service commands. The multiplicity of assignments, therefore, engenders officers that who are multifaceted, as well as extremely dedicated and loyal to NOAA and the nation. This talent pool has contributed significantly, not only to NOAA but to other agencies, as well as the international community. Examples are numerous, but include the current president of the International Hydrographic Office in Monaco, fellows in the American Geophysical Union, past presidents of various sections of prestigious scientific and professional societies, and acknowledged world experts in the areas of geodesy, photogrammetry, and hydrography.

NATIONAL INTERESTS

There are significant national interests, to include environmental safety and potential national security implications that must also be carefully examined and considered in evaluating any proposal to disband NOAA.

First, Commissioned Corps officers are subject to a legislative transfer provision similar to that of the United States Coast Guard and Public Health Service, whereby the Corps' officers, ships, and equipment can be transferred immediately to the armed services in time of war and or national emergency. This legislative transfer provision was enacted to ensure that the nation could rapidly and efficiently tap the technical expertise of C&GS officers for the purpose of national defense. During World War II, officers served under assignment to the Army, Navy, and Marine Corps in all theaters of the war, often in the front lines or in enemy-held territory as artillery surveyors, amphibious engineers, hydrographers, geophysicists, reconnaissance specialists, and cartographers.

This contingent of officers received four Silver Star medals for gallantry under fire, seven Legion of Merit medals for exceptional technical contributions to the war effort, and numerous Bronze Star medals with Combat "V" for conducting surveys in enemy-held territory or while under fire. C&GS ships also received commendations for their role in charting the unknown waters of the western Pacific, often in advance of, and therefore unprotected by, fleet units.

Within the Navy, C&GS officers served as hydrographers throughout the western Pacific and were present at all major landings subsequent to Tarawa. As a direct result of difficulties encountered during the Tarawa landings, in which these officers had not been employed, Admiral Richmond Kelly Turner, chief of Naval amphibious forces in the Pacific, placed a C&GS officer in charge of all hydrographic operations associated with naval amphibious forces. A C&GS officer served as Force Hydrographer for the remainder of the war and directed the hydrographic efforts at Kwajalein, Peleliu, Saipan, Guam, Tinian, Iwo Jima, and Okinawa.

C&GS officers attached to the Marine Corps served primarily in two capacities, as either artillery surveyors or as intelligence officers, and they served in all major actions of the Pacific war. As artillery surveyors they often landed with the first wave to orient Marine artillery amidst the initial assault firestorm, and then carried their surveys forward -- often beyond the front lines. After providing survey control for Marine artillery, they aided in locating enemy artillery. On Iwo Jima, for example, a C&GS officer determined the position of 16 Japanese guns that were subsequently destroyed. Because of the nature of the work, these officers were readily exposed to hostile fire and often referred to as "sniper bait."

The nation has since been fortunate to not have seen another conflict on the scale of World War II and the need to directly transfer NOAA Corps officers to one of their sister services has, therefore, not arisen. Nevertheless, the NOAA Corps has continued to make vital contributions during national emergencies.

Today's threat includes not only military, but environmental threats as recently announced by the State Department. When the EXXON VALDEZ oil spill occurred, NOAA Corps officers, working with the Coast Guard, were heavily involved both ashore and at sea by operating NOAA ships that conducted environmental surveys of the area around the spill.

During Operation Desert Storm, Iraq created some of the worst oil-field fires and oil spills in history. The Commissioned Corps served with the armed forces during both Operation Desert Shield and Operation Desert Storm. NOAA provided ship and technical expertise for environmental appraisal, and the first comprehensive study of the Persian Gulf. NOAA Corps officers ashore provided scientific expertise in hazardous-materials management, leading shore parties and conducting surveys of oil-related damage to beaches and tidal areas.

The NOAA Ship MT MITCHELL carried a contingent of world-class scientists to the Persian Gulf to evaluate and determine the extent of the environmental damage. Prior to sailing, the uniformed service status of the officers allowed for immediate access to critical and classified information such as mine threat, and other military risk assessments. As a U.S. Government vessel commissioned in the public service, commanded by uniformed service members, and with sovereign status, MT MITCHELL easily bypassed the routine restrictions placed upon commercial and civilian research vessels. This status provided instant credibility in dealing with the on-site commanders of several Persian Gulf nations, where port security and logistics are controlled by military services. Research operations around several critical islands, controlled by these countries' military services, required negotiations between NOAA Corps officers and the local commanders.

While operating in the Persian Gulf, MT MITCHELL maintained close communications with other U.S. forces, both as a safety measure and to ensure smooth logistics through the military. The MT MITCHELL was the first U.S. Government ship to operate in Iranian waters in over 13 years. Although subject to occasional challenges by Iranian warships, the warship status and uniformed service command ensured recognition of MT MITCHELL's sovereign status and prompt acknowledgment of support for the mission. Both the Iranian scientists and Iranian naval observers on board MT MITCHELL commented that such operations would have never been possible on a civilian research ship, and provided anecdotal information on the earlier failure of such efforts involving civilians and non-government ships. The NOAA Corps uniform was also accorded instant credibility by Saudi Arabian, Kuwaiti, and Iranian authorities and observers. Most importantly, the skills and knowledge of the NOAA Corps officers maximized the productivity of this scientific expedition by providing a safe, effective research platform, and a means to collect critical data. The captain and crew of this expedition received a Commerce Gold and Silver Medals, respectively, for their service.

A more recent example of the continued vital importance of the NOAA commissioned corps is the NOAA Ship RUDE, which located the wreckage of TWA Flight 800 within 24 hours of the crash. The RUDE and a shore component,

composed of NOAA Corps officers, created highly detailed map products that greatly facilitated the retrieval of wreckage by Navy divers. The efforts of these Commissioned Corps officers was recently recognized by Secretary Pena of the Department of Transportation at a United States Coast Guard Awards Ceremony with a Public Service Commendation and by NOAA's parent bureau, the Department of Commerce, with the Department's highest award - the Commerce GOLD Medal.

In summary, the Commissioned Corps continues to be recognized for technical competence, leadership, and devotion to duty -- even under the most difficult conditions. The Corps provides "instant government recognition" and excellent interface to their fellow uniformed services. In addition, the Corps has a code of dress/appearance, readily gaining trust and respect, and providing NOAA and the nation with a needed "service to service" interface. The Corps is subject to transfer to the military services on immediate notice and has served, or is serving, in interface assignments with the Coast Guard, Defense Mapping Agency, Oceanographer of the Navy, Naval Meteorology and Oceanography Command, and occasionally with foreign offices. In my opinion, the nation would lose an extremely valuable asset if the Commissioned Corps were eliminated. As Vice President Gore stated in a letter to the Commissioned Corps on its 1994 anniversary:

"The NOAA Corps has provided valuable support to the other uniformed services in times of war and will continue to play an important role in supporting safe navigation, sustaining the health and harvests of our oceans, and providing advance warnings of hazardous weather conditions. As the Corps looks to the future, there will be many opportunities to utilize advanced technologies and alternative platforms and to develop new and innovative ways of operating. I am sure that the flexibility and adaptability that the Corps has demonstrated in the past will serve it well in the years to come."

COST SAVINGS

The last point is the projected cost savings from eliminating the NOAA Corps - the cost savings are minimal or non-existent. The asserted basis for dissolution is the mistaken belief that savings can be garnered through the privatization and civilianization of the Commissioned Corps. Simply stated, the original proposal to eliminate the Commissioned Corps was, unfortunately, not based on a thorough economic analysis.

When the NOAA administrator announced his intentions to eliminate the NOAA Corps, a general accounting office study requested by Representative Kasich was underway and nearing completion. The only cost study available at that time, in fact, showed that the NOAA Corps was actually less costly than an equivalent civil service work force. This study, prepared by Arthur Andersen & Co. under a contract initiated by the administrator's office, showed that the NOAA Corps was about \$500,000 less expensive than its civilian counterparts. Clearly, NOAA'S decision to eliminate the NOAA CORPS was not based on economics, but simply politics,

i.e., to comply with the vice president's national performance review recommendation to eliminate the NOAA Corps with a projected cost savings of \$35 million.

The subsequent GAO report (GAO-GGD-97-10, "Federal Personnel Issues: Issues on the Need for NOAA's Commissioned Corps") found only a 2% or about \$500,000 cost differential between the Corps and an equivalent cadre of civil servants. The GAO's cost comparison did not, however, include either the overtime costs of using civilian aircraft pilots versus NOAA corps pilots who do not earn overtime or the increased cost of moving a civilian as noted in the study conducted by Arthur Andersen. In particular, moving a member of the uniformed services entails less than one-third the cost of moving a civilian. Therefore, when moving costs are considered, the cost benefit tilts in favor of the NOAA commissioned officer.

There are also environmental issues. NOAA Corps officers are the only group of uniformed federal hydrographers in the nation. NOAA's nautical charts are highly regarded by the maritime community. The loss of the hydrographic expertise at NOAA could, therefore, jeopardize the nation's ability to conduct overseas military operations from the sea, as previously discussed. In addition, the loss of this hydrographic expertise could jeopardize the environment and safety of our coastal waterways through which most of our international trade is conducted.

Any purported savings realized through eliminating the Commissioned Corps would potentially be more than offset by the loss of the Commissioned Corps' capacity for rapid response to prevent catastrophic environmental accidents, such as the grounding of an oil tanker on an uncharted rock. Mobility and rapid response -- attributes displayed during Operation Desert Shield/Desert Storm, the EXXON VALDEZ disaster and the crash of TWA flight 800 -- reflect the value of uniformed-service status to the nation.

As NOAA looks to increase reliance on private contractors and outsource hydrographic surveys, there is the issue of tort liability for any private civilian organization providing hydrographic surveys for use in creating U.S. government nautical charts. In particular, it is extremely doubtful that a private entity could obtain catastrophic insurance from another commercial entity for liability against a suit arising from the grounding of a cruise ship on an uncharted rock or an environmental catastrophe such as EXXON VALDEZ that resulted from deficiencies in nautical charts. As a result, the federal government would in all probability have to assume such liability. Given the foregoing, privatization of the national charting program must be carefully considered and explored in-depth to ensure that increased costs are not incurred as a result of privatization.

As currently presented in the proposed FY98 budget, the apparent "cost" of eliminating the NOAA Corps is only \$6 million more than the FY97 retired pay line item of \$8 million, or a total cost of \$14 million. However, in reality, the total cost is much higher. In addition to the \$14 million currently budgeted for elimination, are the retirement pay for

current retirees and the retirement pay for those officers who would be forced to retire if the Corps is eliminated. These additional retirement pay costs are estimated to be in excess of \$10 million annually; this is an unfunded liability that does not appear in the proposed FY98 NOAA budget.

Simply stated, for no increase in costs, the Commissioned Corps provides the nation with a cadre of highly professional and dedicated women and men who serve in a multitude of ways. Without the Corps, the nation will suffer over the long run. Furthermore, when we again find we need the Corps, it will take years to get it back, at an even higher cost, perhaps at the cost of lives.

If all the costs of elimination are fairly considered, there is a significant savings in keeping the NOAA Corps that has served the nation faithfully for decades. Clearly, the potential cost savings from eliminating the NOAA Corps is nonexistent. The short-sighted reasoning of the Administration in eliminating the NOAA Corps could have an adverse impact on the environment and potentially impair our national security in time of crisis.

SUMMARY

In closing, any proposal to eliminate the Commissioned Corps must carefully examine the potential risks to the nation from the loss of the Corps and its technical expertise. Dissolution should not be permitted to proceed without a verifiable plan for how NOAA plans to continue providing services to the nation, such as nautical charting, without added cost to the taxpayer. This plan should be especially specific in the area of hydrographic surveys, where private contractors may not accept tort liability for their surveys or agree to conduct surveys in remote areas such as Alaska or in times of national emergency with the other uniformed services. In short, the outstanding service the NOAA Corps provides to the nation and the fact that there will be virtually no savings in its dissolution must lead to the retention of the Commissioned Corps.

John Bossler, Director OSU Center for Mapping
1216 Kinnear Road Columbus Ohio 43212 (614) 292-1600

Testimony of
Will Connelly
to the
U.S. Senate
Subcommittee on Government Management, Restructuring
and the District of Columbia
with respect to
Opportunities for Management Reforms at NOAA

About the Author

Will Connelly practices as a marine business development consultant in Fort Lauderdale, Florida. He served on the Department of Commerce Oceanic and Atmospheric Management Advisory Committee (OAMAC) as a member of the Fleet Modernization Subcommittee, and is a former vice president of Marine Acoustical Services/Tracor Marine, president of U.S. Technology and Sea-Flight Corporations. He has been closely connected with the operation of more than forty government and privately owned research ships operating world-wide, including Arctic and Antarctic waters; with airborne oceanography and remote sensing; and authored a Navy study relating to potential replacement of contractor-operated P3 aircraft used in a special test program. He is a member of the Board of Governors of the Nova Southeastern University Oceanographic Center, and served on the joint National Science Foundation/National Oceanic and Atmospheric Administration (NSF/NOAA) Ocean Resources 2000 panel and the U.S./Japan Cooperative Program in Natural Resources (UJNR) Marine Facilities Panel. Mr. Connelly was awarded a patent on a precision electronic navigation system and is avocationally a jazz musician, pilot, and radio 'ham'.

Senators:

While I regret that I am not appearing before you personally, I am grateful for the opportunity to submit this testimony and hope that, because the views I offer in connection with management of NOAA's marine operations based on long experience in the field, they may be of some value to you in your deliberations.

Background: Let me provide a brief review of my involvement with NOAA. To advise on a broad range of NOAA technical and management issues, one of which was NOAA's Fleet Modernization Plan, Secretary of Commerce Robert Mosbacher assembled a panel of 13 experts, including former president/CEO of Shell Oil John Bookout, president Edward Campbell of Newport News Shipbuilding, and Dr. Charles Hollister, dean of Woods Hole Oceanographic Institution, all of whom were assigned to the fleet modernization subcommittee on which I also served. We concluded that the NOAA fleet modernization plan we evaluated was seriously defective: the \$1.4-billion budget was poorly supported by factual data, and it called for construction of more, more elaborate and larger new ships than made any sense in the context of NOAA's operational requirements. It was clear to us that NOAA had not examined the methods of other federal and commercial research ship operators to learn how they could get technically sound ships at lower cost and how they could operate them more efficiently. Further, the NOAA Corps, which created this plan, adamantly resisted OAMAC suggestions and recommendations on ship crewing and outsourcing that would, if followed, have led to far more efficient and dramatically less costly operations.

Better Management Requires Better Management Leadership: The problems with the fleet modernization plan and the NOAA Corps unveiled one root management problem within the agency: *from its birth in 1970, NOAA has been run by scientists drawn from government and academia, never from business.* NOAA has never been managed by the kind of entrepreneurial scientist who founded and grew Hewlett-Packard, SAIC and similar enormously successful high tech companies.

A precedent was set when a respected scientist, Dr. Robert White, was appointed as the first NOAA administrator, and this precedent has been followed by subsequent Republican and Democratic administrations for more than a quarter century. *An important outcome of this hearing could be a redefinition of the qualifications and confirmation criteria for future nominees for this post.*

Please note that implicit in this view is the assumption that NOAA will still exist. NOAA provides valuable and essential services to the nation, and it should be preserved. Further, it should be made an independent executive agency.

NOAA Is Not Smart Enough to Operate Ships and Aircraft, But Should Be Able to Learn to Manage Contractors Who Are: The litany of professional miscues and inefficiencies of NOAA's marine and aircraft operations are recited in the NACOA ("Stratton Commission"), OAMAC and Marine Board reports and in "It's Time To Beach The NOAA Corps", a paper I authored that appeared in the February 1993 issue of *Proceedings of The U.S. Naval Institute*. In a nutshell, a succession of NOAA administrators and top level have been dazzled and bamboozled by the uniformed Officer Corps, whose latest folly (the completely avoidable and laughably unprofessional dockside sinking of HALCYON, a white elephant they took from the Army because it was "free") managed to make the *ABC News with Peter Jennings*.

A bill - HR 1278 - has been introduced that will terminate the NOAA Corps on September 30th if Undersecretary Baker does not do so earlier. What needs to be added to this bill and any Senate formulation is a mandate linked to appropriations and authorization that prohibits NOAA from operating ships and aircraft with agency personnel. NOAA can and should send aloft, and to sea, in *professionally operated ships and aircraft* their research scientists and technicians. The platforms may be government or contractor owned: it is only important that they be *run and maintained* by competent people.

Until appropriate legislation becomes effective, however, the Congress should, employing means short of legislation with which it motivates desired

courses of action:

1) Discourage the NOAA Administrator from permitting present NOAA Corps officers to transfer into civil service posts without full and fair competition from present NOAA employees and other qualified candidates.

NB: Full and fair competition is not achieved when the NOAA Corps officer who will apply for a civil service post writes the job specifications, as appears to be happening according to present NOAA personnel.

2) Encourage the NOAA Administrator to become familiar with the contractual and management methods used by the Naval Surface Warfare Center, the Environmental Protection Agency, and the Department of Energy to have federally-owned and contractor provided ships operated in support of research and technical missions, including mapping and charting.

3) Prompt the NOAA Administrator to search for a person with *industrial management experience in the operation of research platforms*, to organize and manage post NOAA Corps science and mission responsive ship and aircraft operations.

I shall be pleased to answer any questions.

